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INFLUENCE OF LARGE DOSES OF DIGITALIS AND DIGITOXIN ON THE BLOOD PRESSURES IN MAN*

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The influence of the several digitalis bodies on the blood pressure in both man and animals has been the subject of considerable study. It is now quite generally agreed that strophanthus, amorphous strophanthin and ouabain do not exert any direct vasoconstrictor action when administered to man in therapeutic doses, and the present tendency is to regard both digitalis and digitoxin as similarly devoid of such action. There is, however, still some divergence of opinion in regard to the latter drugs, and it is my purpose to review the essential literature relating to this question and also to present the results of a careful study of a small group of cases.

Gottlieb and Magnus[1] reviewed the literature in support of the view that digitalis increased the blood pressure, and recorded a series of animal experiments which has done more, perhaps, than any other study to lead to the belief that the digitalis bodies are capable of producing marked vascular constriction through direct action on the vessel walls. Their experiments were carefully executed, and proved that large doses of digitoxin, true digitalin, amorphous strophanthin, ouabain and convallamarin were capable of causing great elevation of the systolic blood pressure when thrown into the blood stream in concentrated solutions. Gottlieb and Magnus used doses of the several drugs which ranged from about five to over fifteen times the minimal fatal doses. They noted particularly that when the smaller amounts were employed the results were not constantly obtained. They were able to show that the increased blood pressure was due to the combination of an increased force and volume output of the heart's systole with a pronounced, direct constrictor action of the drug on the vessels of the splanchnic area. In the case of digitoxin this constrictor action was also exerted on the peripheral vessels generally, while with the other drugs studied such an action on the peripheral vascular system was soon overcome by dilatation, in part through increased pressure, and in part through a reflex from the splanchnics.

Although these experiments clearly showed that the several digitalis bodies employed, and especially digitoxin, were capable of causing in animals both splanchnic and peripheral vasoconstriction and great elevation of the blood pressure, the same results cannot be obtained when these bodies are used in man. Quite contrary to the authors' own conclusion, their observation that doses smaller than about five times the fatal dose often failed to cause the typical response is very strong evidence that therapeutic doses will not cause either vasoconstriction or elevation of the systolic blood pressure in man. This is rendered even more probable when we remember that the full therapeutic dose is usually administered to man in relatively small fractions repeated over a period of several hours or days, so that the drug enters the blood stream very slowly. Finally we have shown repeatedly in the laboratory[2] that digitoxin and other digitalis bodies leave the blood stream almost immediately after their direct intravenous injection.

The remarks just made apply with equal force to the possibility of drawing conclusions for man from the perfusion experiments of Fahrenkamp,[3] who found that digitoxin in a concentration of 1:840,000 sometimes caused some constriction when perfused through the sensitive vessels of the rabbit's intestine, while concentrations of 1:330,000 usually caused marked constriction, though even these sometimes failed. The largest single dose of digitoxin which we have dared to give to a man by mouth was 1.5 mg. to a patient weighing 59 kg. (130 pounds). Starling states the blood volume for man as about 5 per cent. of his weight, so that this patient had about 3 kg. of blood. If the entire amount of digitoxin given could have entered the circulation at once, the resulting concentration would have been only about 1:2,000,000, or considerably less than half the lowest concentration found effective on direct perfusion. But no one pretends that the oral administration of any of the digitalis bodies is followed by its immediate absorption into the circulation, and it is obvious from our experiments just cited that during absorption the drug would leave the blood stream almost as rapidly as it entered.

The experiments of Gottlieb and Magnus and of Fahrenkamp are cited as typical of those on which the argument has been based that the digitalis bodies are capable of causing vasoconstriction in man. It must be quite obvious to any one who gives the matter a moment's thought that it is utterly fallacious to reason from such experiments that similar effects would be produced in man from the therapeutic use of digitalis or its congeners.

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* Read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Gottlieb and Magnus: Arch. f. exper. Path. u. Pharmakol., 1902, **47**, 135.

2. Hatcher, R. A., and Eggleston, Cary: Unpublished data.

3. Fahrenkamp: Arch. exper. Path. u. Pharmakol., 1911, **65**, 367.

However, men of wide reputation, whose words have gained authority, do accept the results of these experiments as applying to man. One of the most illustrious of these is Wenckebach,[4] who says:

> However poor our real knowledge of these conditions (vascular) in man may be, we yet may say that there exists a vascular action of digitalis in man. Not only the analogy with experiments in mammals may be called in, but I think every practitioner has experienced the curious fact that one may *feel* at the radial pulse whether digitalis is given or not. It is not only blood pressure which gives this curious sensation of the digitalis pulse; I think it must be the condition of the wall of the artery altered by digitalis.
>
> Sometimes we may observe even a very strong contraction of the arteries as far from the periphery as the radial and the brachial pulse. I remember very well the case of a lady, in a very bad condition by exhausted and diseased heart, in which a desperate dose of digitalis, given as an enema, caused the radial pulse to disappear by constriction of the arterial wall, the throbbing carotids being filled to a maximum, and the heart working strongly against a very high blood pressure in the aorta, yet not succeeding in pushing a pulse into the peripheral vessels.

These paragraphs illustrate to what extremity so-called clinical observations and deductions can be carried by one of authority. The author lends the weight of his opinion to the belief that digitalis may exert a powerful peripheral vasoconstriction in man and yet he cites no evidence whatever worthy of the name in support of his views, for no one could be expected to accept the ill defined feeling of the pulse as evidence of vasoconstriction, or to take seriously the observations of the effects of that "desperate dose of digitalis" which obliterated the radial pulse. It might be observed that it is just such utterances as these which tend to make thoughtful men look askance at the general run of clinical observations, often to the detriment of accurate studies of real worth.

A number of reports of observations of the blood pressure in man under the influence of therapeutic doses of the digitalis bodies have appeared showing that there may be some increase in the systolic pressure. But the same result has been observed to follow the use of strophanthin, which is generally conceded to be practically devoid of vasoconstrictor action in doses suitable for therapeutic administration. On the other hand, many observers have reported that the therapeutic use of digitalis is not constantly accompanied by any rise of systolic blood pressure and is often associated with a fall or with no change.

As long ago as 1901 Sahli[5] stated that in cases with circulatory stasis and high blood pressure digitalis not only relieved the stasis, but also very often reduced the blood pressure by from 30 to 40 mm. of mercury. He believed that this was due to the relief of the vascular constriction associated with dyspnea and to a dilatation of the peripheral vessels. Mackenzie[6] concluded from a painstaking study of the actions of digitalis in cardiac therapeutics that "medicinal doses of digitalis do not affect the arterial walls, or if they do so, their effect is so slight as not to be recognizable." Cushny[7] stated that in patients the blood pressure was rarely elevated by digitalis and, in fact, it might fall as the general improvement set in. Martinet[8] pointed out that digitalis might raise, lower, or not alter the systolic blood pressure, but that it always reduced the diastolic pressure and thereby increased the pulse pressure. He contended that this fall in diastolic pressure indicated a dilatation of the vessels.

Finally, a number of other observers have also dealt with this problem, among whom we might mention Czyhlarz,[9] Gross,[10] Neu,[11] Geisböck,[12] Schwartz,[13] Fellner,[14] Szinnyei,[15] Price,[16] Lawrence,[17] and Cadbury.[18] The results obtained by all of these observers agree, in the main, with the conclusions of Sahli, Mackenzie and Cushny, but they are summarized in the succeeding paragraph.

We find that the systolic blood pressure was recorded for 181 cases. In sixty-six of these, or about 36 per cent., the systolic pressure is stated to have risen or to have tended to rise; in fifty-seven, or 31 per cent., it fell, and in fifty-eight, or 32 per cent., it is recorded as having shown no change. In 116 instances in which the diastolic pressure is mentioned it is stated to have been increased in twenty-four, or 20 per cent.; to have shown no change in sixteen, or 15 per cent., and to have fallen in seventy-six, or 65 per cent. While the actual extent of the changes is not always stated, it would seem that digitalis is about as likely to influence the systolic blood pressure in one direction as in another, or not to alter it at all. With the diastolic pressure, however, the chances are nearly two to one that digitalis will cause some reduction, and the chances are more than three to one in favor of its reducing it as compared with the likelihood of its raising it. Other things being equal, this evidence certainly does not point to the occurrence of any marked vasoconstrictor action of the drug in man. The opinions expressed by the several authorities cited are in very general agreement that digitalis has little constant influence on the systolic blood pressure when used therapeutically, and some even go so far as to suggest that it actually often causes some vasodilatation, which would account for the reductions observed in the diastolic pressure.

PERSONAL OBSERVATIONS

These observations have been made on a series of fourteen hospital patients under the following conditions of control: No patient was accepted for study who had received any digitalis body within two or three weeks prior to the beginning of the observations. All were kept in bed and given a light diet which varied but little from day to day throughout the entire period of observation, and the amount of liquid which they were permitted to have was restricted to 1,250 c.c. for each twenty-four hour period. In general, all other medication was omitted during the period of observation, though at times it was necessary to give one or two small doses of morphin or codein for the relief of great distress or sleeplessness during the period before the administration of digitalis. The observations covered a period of several days before as well as after the digitalis was given. The blood pressures were read by the auscultatory method, a simple mer-

4. Wenckebach: Brit. Med. Jour., 1910, **2**, 1600.
5. Sahli: Tr. XIX Kong. inn. Med., 1901, p. 45.
6. Mackenzie: Heart, 1910-1911, **2**, 273.
7. Cushny: Am. Jour. Med. Sc., 1911, **141**, 469.
8. Martinet: Tr. XVII Internat. Cong. Med., 1913, section v, part ii, Therapeutics, p. 232.
9. Czyhlarz: Wien. klin. Rundschau, 1900, **14**, 285.
10. Gross: Deutsch. Arch. klin. Med., 1902, **74**, 296.
11. Neu: Blutdruck-Untersuchungen: Inaug. Dissert., Heidelberg, 1902, p. 332.
12. Geisböck: Deutsch. Arch. f. klin. Med., 1905, **83**, 363.
13. Schwartz: Arch. f. exper. Path. u. Pharmakol., 1906, **54**, 135.
14. Fellner: Deutsch. Arch. f. klin. Med., 1906-1907, **88**, 1.
15. Szinnyei: Therap. Monatsh., 1910, **24**, 427 and 472.
16. Price: Brit. Med. Jour., 1912, **2**, 689, and Tr. XVII Internat. Cong. Med., 1913, section v, part ii, Therapeutics, p. 305.
17. Lawrence: Bost. Med. and Surg. Jour., 1914, **170**, 37.
18. Cadbury: Arch. Int. Med., 1916, **16**, 317.

curial manometer with a broad cuff being used. The readings were taken at approximately the same hour each day, by the same observer, or by one whose readings were proved repeatedly to check within 3 mm. of mercury with those of the usual observer. In any given case the same arm was used throughout.

After the readings had become fairly constant, or after not less than three days of preliminary observation, digitalis or digitoxin was administered orally on the basis of the cat unit of activity and the patient's body weight, as previously described.[19] The digitalis used was given in the form of a purified extract, diluted with lactose and made into capsules, each containing 2.5 cat units, or an amount equivalent to 2.5 c.c. of a high grade tincture. This was done to eliminate the possible influence of alcohol in the tincture. The digitoxin was given in the form of tablet triturates or of the granules of Nativelle's digitaline crystalisée, both preparations having been standardized on the cat. The general routine was to give somewhat over half of the calculated total therapeutic dose at 6 p. m.; a large fraction of the remainder at midnight, and to finish the administration in one or more small doses at six hour intervals thereafter. In most of the cases the blood pressures were taken at about 10 a. m. daily. Frequent polygraphic or electrocardiographic records, or both, were taken during the observations.

The rigorous conditions of study just outlined were adopted in order to eliminate, so far as possible, adventitious factors which might influence the results—a detail which seems to have been largely overlooked by most others who have approached this problem. The studies were purposely made of brief duration because it was desired to secure the effects of the drugs as acutely, and therefore as intensely, as possible, for the pharmacologic studies had shown that whatever vasoconstrictor action the digitalis bodies had was elicited only with massive doses and lasted but a short time. For convenience of analysis the cases have been grouped into two classes: those with high, and those with normal or low, systolic and diastolic blood pressures. Brief summaries of four case records are given below. The first two are typical of the entire series, the second two represent the only exceptional results.

CASE RECORDS

CASE 8.—W. A., a man, aged 25, was affected with chronic endocarditis, mitral insufficiency and stenosis. He was admitted, March 14, 1917, with dyspnea, orthopnea and pain in the large joints. He had had acute rheumatism at age of 22 with repeated attacks since. Rest in bed for five days with restricted diet reduced the dyspnea somewhat, but the orthopnea persisted. The patient's weight was 147 pounds.

TABLE 1.—BLOOD PRESSURE IN CASE 8

March	Systolic	Diastolic	Pulse Pressure
15	142	32	110
16	138	30	108
17	132	24	108
19	134	20	114
20	132	20	112
21	140	16	124

Digitalis extract capsules were administered: March 19, 6 p. m., four capsules; midnight, two capsules; March 20, 6 a. m., dose omitted. The dose was equivalent to 15 c.c. of active tincture. The blood pressure was taken daily at 10:30 a. m. March 20, 10:30 a. m., dyspnea and orthopnea were entirely relieved, and there was marked clinical improvement.

19. Eggleston, Cary: Digitalis Dosage, Arch. Int. Med., July, 1915, p. 1.

CASE 14.—J. McK., a man, aged 56, was suffering from chronic interstitial nephritis, hypertension, mitral stenosis and insufficiency. He was admitted, Sept. 19, 1916, with edema of legs, dyspnea and orthopnea. There was no syphilitic or rheumatic history. Rest in bed and restricted diet for eight days produced no material effect. The patient's weight was 154 pounds.

Digitoxin was prescribed: September 27, 6 p. m., 1.5 mg.; midnight, 1.0 mg.; September 28, 6 a. m., 0.5 mg. The total dose was 3.0 mg. in twelve hours. Blood pressure was taken daily at 10:30 a. m. September 28, 10:30 a. m., there was

TABLE 2.—BLOOD PRESSURE IN CASE 14

Sept.	Systolic	Diastolic	Pulse Pressure
23	168	104	64
24	174	112	62
25	178	118	60
26	176	118	58
27	182	120	62
28	190	112	78
29	184	96	88
30	178	94	84

marked clinical improvement, marked diuresis, relief of dyspnea and orthopnea.

CASE 4.—J. M., a man, aged 41, had aortic stenosis and insufficiency, cardiac hypertrophy and dilatation. He had had rheumatism eleven years previously, and several attacks since. He had had chancre twenty years ago; the Wassermann test gave ++++. He was admitted, July 5, 1915, with dyspnea, orthopnea and marked edema. There had been several previous similar attacks. Rest in bed, restricted diet and antisyphilitic treatment were without effect after seven days. The patient's weight was 119 pounds.

Digitalis extract capsules were ordered: July 12, 6 p. m., four capsules; midnight, two capsules; July 13, 6 a. m., two

TABLE 3.—BLOOD PRESSURE IN CASE 4

July	Systolic	Diastolic	Pulse Pressure
8	130	60	70
9	130	44	86
10	128	50	78
12	126	44	82
13	134	0	134
14	146	0	146
15	132	0	132

capsules, and thereafter one capsule every six hours until midnight. The total dose to 6 a. m. was equivalent to 20 c.c. of active tincture. The blood pressure was taken daily at 10 a. m. Clinical improvement was slight by 10 a. m., July 13; it was very marked, with complete relief of dyspnea and orthopnea and marked diuresis by 9:45 a. m. on July 14.

CASE 6.—J. C., a man, aged 55, was affected with chronic endocarditis, mitral insufficiency and stenosis. Compensation was nearly normal. He had had syphilis twenty-five years previously. Rest in bed and restricted diet for ten days brought no obvious change in condition. The patient's weight was 145 pounds. He was admitted, July 2, 1916.

TABLE 4.—BLOOD PRESSURE IN CASE 6

July	Systolic	Diastolic	Pulse Pressure
10	104	38	66
11	108	38	70
12	106	40	66
13	118*	46	72
14	104	32	72
15	122*	30	92

* Repeated readings.

Digitalis extract capsules were administered: July 12, 6 p. m., five capsules; midnight, two capsules; July 13, 6 a. m., one capsule. The total dose of digitalis was equivalent to 20 c.c. of active tincture. The blood pressure was taken daily at 10:30 a. m.

Digitalis caused slight sinus arrhythmia and only slight clinical evidence of improved heart action.

ANALYSIS OF OBSERVATIONS

The averages for the three days before and the three days after the administration of digitalis have been calculated for the systolic, diastolic and pulse pres-

sures and the heart rate for each case and are given in Table 5. As there was no difference observed between digitalis and digitoxin, the two drugs are

TABLE 5.—AVERAGE PRESSURES FOR THREE-DAY PERIODS BEFORE AND AFTER DIGITALIS OR DIGITOXIN

Case No.	Systolic Before	Systolic After	Diastolic Before	Diastolic After	Pulse Pressure Before	Pulse Pressure After	Pulse Rate Before	Pulse Rate After
A. Normal or Low Pressures:								
1	142*	145*	87*	80*	55*	69*	95*	77*
2	122	113	96	79	27	33	96	76
3	135	144	94	67	41	51	89	86
4	128	137	46	0	82	137	93	91
5	129	134	78	68	51	66	117	117
6	106	115*†	39	36	67	75	93	77
7	113	108	81	63	32	45	88	71
8	135*	135*	22*	18*	111*	118*	80*	76*
B. High Pressures:								
9	167	178	113	116	54	62	108	107
10	246	223	126	117	120	106	...	...
11	168	171	118	105	50	66	90	83
12	208	223	129	129	79	93	119	111
13	180	181	107	91	73	91	87	82
14	179	184	119	101	60	83	83	71

* Averages for two days only.
† Exceptional variation in two readings.

considered together. Since a change in either direction of less than 10 mm. of mercury can hardly be regarded as significant, in view of a possible error of about 5 mm. in reading and of a normal diurnal variation of an equal or greater extent, this has been adopted as the dividing point for the analysis of the results.

Table 6, constructed from the figures of Table 5, shows:

1. Among the group with approximately normal systolic pressures none showed a change in the systolic pressure amounting to 10 mm. of mercury; five cases showed a fall of 10 mm. of mercury, or over, in the diastolic, none a rise and three no significant change; five showed a rise of 10 mm. or over in pulse pressure, none a fall and three no change. All of the cases responding to digitalis with an increase in the pulse

TABLE 6.—EXTENT OF PRESSURE CHANGES (CASE NUMBERS)

A. Normal or Low Pressures	Systolic	Diastolic	Pulse Pressure	Improvement
Rise of 10 mm. or over	.....	.....	1, 3, 4, 5, 7	Marked, 1, 3, 4, 5, 7, 8
Fall of 10 mm. or over	.....	2, 3, 4, 5, 7	.....	Moderate, 2
Change of less than 10 mm.	1, 2, 3, 4, 5, 6, 7, 8	1, 6, 8	2, 6, 8	Slight, 6
B. High Pressures				
Rise of 10 mm.	9, 12	.....	11, 12, 13, 14	Marked, 11, 12, 14
Fall of 10 mm.	10	11, 13, 14	10	Moderate, 9
Change of less than 10 mm.	11, 13, 14	9, 10, 12	9	Slight, 13 None, 10

pressure, and one with no change, showed marked clinical improvement; while of the remaining two cases with no significant change in pulse pressure, one patient was moderately, the other slightly, benefited by treatment.

2. Among the high pressure group the systolic pressure rose 10 mm. or over in two cases, fell 10 mm. or over in one, and showed no change in three; three cases showed a fall of 10 mm. or more in diastolic and three no change; four showed a rise of 10 mm. or over in pulse pressure and one each, a fall and no significant change. Three of the four cases showing increased pulse pressure also showed marked clinical improvement; in the fourth this was slight. The one case with no change in pulse pressure showed moderate improvement, and the only case in either series in which the pulse pressure fell by 10 mm. or more showed no improvement. The last patient grew progressively worse and died about one week later.

In all of the first group of cases the increase in pulse pressure was chiefly due to a fall in the diastolic, though rises of form 3 to 9 mm. occurred in the systolic in four of the five cases. Fall in diastolic pressure also chiefly accounted for the increased pulse pressure in three of the four cases in the second group, the other having been due wholly to a rise in the systolic.

Taking all of the cases together, it is seen that the administration of large doses of digitalis or digitoxin has very little tendency to elevate the systolic pressure, this having been increased by 11 mm. of mercury in one and 15 mm. in a second case. In only one case was the systolic pressure materially reduced, namely, by 23 mm. of mercury. On the other hand, the diastolic pressure was significantly lowered in seven, or 50 per cent. of the cases, while it was never significantly raised.

It is evident, therefore, that digitalis and digitoxin have very little influence on the systolic pressure in either direction, that they tend to produce a significant reduction in the diastolic and, more decidedly, to pro-

TABLE 7.—TOTAL AVERAGE PRESSURES FOR THREE DAYS FOR ALL CASES AND FOR EACH GROUP

	All Cases*	Normal Pressure Cases*	High Pressure Cases
Systolic Pressure:			
Before	156	124	191
After	156	127	193
Percentage of change	0	+2.4	+1
Diastolic Pressure:			
Before	95	73	118
After	86	64	110
Percentage of change	−9.5	−12	−7
Pulse Pressure:			
Before	62	51	73
After	73	63	83
Percentage of change	+18	+23	+14

* Excluding Case 4.

duce a material increase in the pulse pressure. These facts are brought out strikingly in Table 7, which gives the grand averages of three days' readings of all pressures, both before and after treatment.

Since slowing of the heart is one of the most characteristic actions of digitalis, and as this might account for the diminution in the diastolic pressure, this relation was studied in eleven of the cases. Reference to Table 8 shows that: 1. In the seven cases with a fall of 10 mm. or more in diastolic pressure, the pulse rate was slowed by more than five beats per minute in only four cases. 2. In the four cases without significant fall in the diastolic pressure, the pulse rate was similarly slowed in three. 3. The greatest reductions in diastolic pressure, 27, 18 and 17 mm. of mercury, were associated with reductions in the pulse rate of three, twelve and twenty beats, respectively. 4. The

TABLE 8.—RELATION BETWEEN SYTOLIC AND DIASTOLIC PRESSURES AND PULSE RATE

Case No.	Systolic, mm. Mercury Rise	Systolic, mm. Mercury Fall	Diastolic mm. Mercury Fall	Pulse Rate Fall
1	3	..	7	21
2	..	9	17	20
3	9	..	27	3
5	5	..	10	0
6	9	..	3	16
7	..	5	18	17
8	0	0	4	4
11	3	..	13	7
12	15	..	0	8
13	1	..	16	5
14	5	..	18	12

smallest reductions in the diastolic pressure, 0 and 3 mm., were accompanied by pulse rate reductions of eight and sixteen beats. 5. In the one case, with no change in the pulse rate, the diastolic pressure fell 10 mm. of mercury.

It is obvious, therefore, that the alterations in the pulse rate do not explain the changes occurring in the diastolic pressure.

Table 8 shows also a similar absence of relationship between the changes in the pulse rate and those in the systolic pressure. And an equal lack of relationship between the changes in the diastolic and the systolic pressures is evident from Tables 6 and 8.

In view of the facts thus brought out, the conclusion seems abundantly warranted that there is no evidence that either digitalis or digitoxin has any direct action on the vessels when given to man even in large therapeutic doses. This agrees precisely with the results of animal experiments, which show that these drugs produce no vascular changes unless given in amounts several times those which are promptly fatal, or perfused through the vessels in concentrations much greater than could ever be reached in man.

To what, then, are the changes in systolic, diastolic and pulse pressures in man due? It is not possible, in the present state of our knowledge, to answer this question categorically, but the following suggestion may be offered: It has been proved that all of the digitalis bodies are capable of increasing the systolic volume output of the heart, and Stewart and Scott[20] have been able to demonstrate that digitalis increases the blood flow through the arm in man. It may be suggested, therefore, that:

1. Digitalis, by improving the circulation, leads to improved pulmonary ventilation with the relief of cyanosis and the abolition of the vasoconstrictor effect of carbon dioxid on the center.

2. The improved circulation results in the more normal functioning of the various organs and tissues of the body, and tends to restore to normal the several mechanisms by which the circulation is maintained at its most efficient level.

On this hypothesis, we should expect to find that the net changes in the systolic, diastolic and pulse pressures would differ in different cases in order best to meet the conditions prevailing. This is precisely what is shown to occur in all of the observations here recorded, and explains the apparent divergence in the results of different observers. The observation that the pulse pressure is increased in the majority of cases in which there is material clinical improvement as a result of the use of digitalis is also in harmony with this hypothesis, since the pulse pressure is to a certain extent a measure of the efficiency of the circulation through the periphery.

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20. Stewart and Scott: Jour. Pharmacol. and Exper. Therap., 1915, 7, 263.

Wild Substitutes for Domestic Plants.—One of the projects outlined by the committee on botany of the National Research Council is the search for wild plants which may be used as wartime substitutes for the more costly crop plants. During the Civil War Dr. John Porcher, a southerner, published a book giving a list of wild plants of the South which could be substituted for much needed food and drug plants. *The American Botanist* (Joliet, Ill.) proposes, with the aid of its readers, to compile a similar list. Information is sought as to any plants not ordinarily cultivated which have edible fruits, seeds, roots, etc. It is suggested that valuable knowledge on this subject might be obtained from hunters, trappers, woodsmen, farmers, Indians and the foreigners who pick up considerable food from the countryside. Similar information is desired concerning plants that can be used in medicine.—From the *Scientific American*, Sept. 8, 1917.

THE NEURASTHENIC AT THE THRESHOLD *

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It is still quite the custom in professional as well as in lay circles to tag the proverbial neurasthenic a physiologic enigma, or a psychologic joke, or some kind of an ill-defined cross between the two. In view of the various and often fanciful versions of his disorder, there is ample room for some public ridicule. It is too bad, however, that the brunt of it should fall on the head of the poor victim and not on his traducers.

The language of some writers implies that we have gone far enough with the explanation of neurasthenia by calling it a fatigue neurosis; that essentially it is an undue fatigability of the central nervous system with morbidly increased sensitiveness or irritability. Others, impressed with the inadequacy of this deduction, especially in accounting for the psychic conditions, undertake to support a psychogenic theory and are willing to define it as primarily a mental malady. A majority of writers declare that the causation is not to be found in tangible or probable structural or anatomic changes, but that the syndrome is the result of a structurally normal organism reacting (organically) abnormally, and that the ultimate or underlying explanation is to be found only in a constitutional defect, a direct hereditary predisposition.

The only possibility of sifting these apparently variant conceptions of essential features is to collect some fundamental or physiologic data as a starting point; enough at least to turn our thought in the direction of a more evident harmony.

For the moment, in this elementary way, we must remember that the fundamental plot of the nervous system is one of defense and that the instincts and their related emotions have had the leading rôle in the evolution of this plot. In the second place we must visualize, as it were, the whole general scheme of reflex performances by which the various species of defense are maintained and coordinated.

Modern physiology undertakes to instruct us concerning the workings of the systems of neural mechanisms by which our orientation with environment is sustained. Therefore, in order to gain conceptions adequate to guide our arguments in this field, we must gain some familiarity and sympathy with physiologic deductions, including the technicalities by which they are presented to us.

For example, in our clinical studies we find the neurasthenic absorbed in his sensations. He is continually disturbed by an abnormal consciousness of them. He is never at par in his subjective condition. This means that he never possesses an emotional equilibrium. In this sense, at least, there is an abnormal psychic condition. As neurologists we all have more or less familiarity with the time-honored contest between psychology and physiology over the causal relations between emotions and visceral reactions and the mental states connected therewith, and from the phases of this argument we may try to derive some coloring for the formation of a lucid theory. Or, again, we notice the fatigue reactions of our neurasthenic patient and are impressed with the fact that to

* Read before the Section on Nervous and Mental Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

a certain extent they may be paralleled with physiologic fatigue, but we are apt to overlook the limits to which these analogies may here be legitimately extended. In short, one of us, affirming a psychic view, fails to sustain his position for lack of a thoroughgoing argument. Another, impressed with the etiologic importance of the physical side of the problem, fails to assemble in proper sequence the data to which he should appeal for defense of his position.

As a result of circumstance, the modern neurologist is a better psychologist than physiologist, at least in a speculative way. The physical side of physiology, so to speak, is his greater stumbling block. We easily neglect the peripheral side of the nervous system, the neural basis, through which the psychic is attained. For example, we cannot grasp the conception of the threshold and the problems of threshold changes unless we know in a physiologic sense something of the range of stimuli and the conditioning of reflex systems thereto, and something of the rules of conduction, and other correlated phenomena of definite value to the equation. In the light of our newer knowledge of certain toxic agents and their effects, I think we are all going to agree that we have reached the place from which we cannot proceed profitably with our argument concerning the interrelations of the psychic and somatic features of neurasthenia and other neuroses without dwelling carefully on questions of threshold.

Our attention in this direction has been particularly stimulated by physiologic and clinical studies of the glands of internal secretion, and especially the physiologic side of this work has led to more definite conceptions, in that these specific substances may determine stimulus thresholds in definite neurons on which their direct stimulative influence falls.

In considering the various clinical syndromes believed to arise from the toxic products of metabolic anomalies and perversions, neurasthenia has received much attention from older writers, who frequently discoursed on its close relationship to arthritism, obesity and other definite syndromes wherein metabolic derangement is the most evident factor. These observations are too fascinating to be neglected, and hence the modern worker is reviewing them in the light of these newer data. Considering the amount of this kind of work now being undertaken, its promising results and its stimulating effects on physiologic work in general, it is not too much to hope that the neurasthenic, and his neurotic associates, are at the threshold of a more fair consideration.

In practical matters of therapy we find promises of the fulfilment of our expectations. Step by step, we are getting away from extremes and beginning to assume a rational attitude. The abuses of the well-conceived rest method began long ago to show us its proper limitations, and to reveal what was fatigue and what was something else in the case of the neurasthenic. The same has happened in regard to psychanalysis. A superenthusiasm in its attempted application has been replaced by a recognition of its value in leading to certain psychogenic features in neurasthenic conditions. In our present efforts at endocrine gland therapy, we are overreaching again and are probably neglecting some of our older lessons. Yet, through its study we are gaining facts which have direct bearing on questions of diagnosis. For example, having been impressed with the fact that a thyroid intoxication may bring out neurasthenic reactions of classic type, we are now casting about for other etiologic possibilities of kindred nature, and owing to this fact our view more readily broadens and we gain a wider conception of the neurasthenic reaction, fundamental in its nature, occurring in somatic states variously produced.

THE PSYCHONEUROSES: HOW SHALL WE LOOK ON THEM TODAY?*

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Twenty-five years ago practically all the neuroses or psychoneuroses were classified as hysteria or neurasthenia. But for many years past there has been a disposition to question and scrutinize these diagnoses, so that gradually the groups have grown smaller and smaller; and today these diagnoses, I suppose, are made very much less frequently than they were twenty-five years ago. This has been my own experience as regards neurasthenia, but not as regards hysteria. An examination of 1,000 cases taken from my private records, beginning in 1894, discovers that the neuroses and psychoneuroses had been classified as shown in Table 1.

TABLE 1.—PSYCHONEUROSES, OCCURRING IN ONE THOUSAND CONSECUTIVE PRIVATE CASES BEGINNING IN 1894

	No. of Cases
Neurasthenia	177
Psychasthenia	0
Hysteria	55
Constitutional inferiority	0
Dementia praecox	0
Psychoneuroses (undifferentiated)	0
Total	232*

* Or 23.2 per cent.

Of all cases seen 23 per cent. were psychoneuroses, 17.7 per cent. were cases of neurasthenia, and 5.5 per cent. were cases of hysteria.

TABLE 2.—PSYCHONEUROSES OCCURRING IN ONE THOUSAND CONSECUTIVE PRIVATE CASES ENDING IN 1916

	No. of Cases
Neurasthenia	36
Psychasthenia	130
Hysteria	69
Dementia praecox	68
Constitutional inferiority	16
Psychoneurorses (undifferentiated)	19
Total	338*

* Or 33.8 per cent.

Comparing this list with 1,000 consecutive cases from my private records running back from December, 1916, I find diagnoses made as exhibited in Table 2.

Of all cases seen, 33.8 per cent. were psychoneuroses.

Strictly speaking, dementia praecox ought not to be included among the psychoneuroses, for this is something different. But it is because a certain number of cases have been and are called neurasthenia, hysteria, etc., that I have thought it proper for the purpose of this study to include it in this table.

Comparing Tables 1 and 2, it is seen that neurasthenia has decreased from 17.7 per cent. to 3.6 per cent., while hysteria has increased from 5.5 per cent.

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to 6.9 per cent. But this increase could be explained, I think, by the much larger percentage of damage cases seen by me later as compared with the earlier period.

I do not accept the view which is held by some that it is useless to attempt to differentiate between the psychoneuroses. There are certain clinical and practical differences between neurasthenia, psychasthenia and hysteria which I believe are significant; and yet I am free to confess that I see all sorts of overlapping and borderland cases. In Table 2 it will be noted that I have recorded nineteen cases of psychoneuroses as undifferentiated.

I have looked over some of my old cases and refreshed my memory somewhat to try to answer the question as to why there is such a great difference in the diagnosis of neurasthenia — 177 cases in the first thousand, as against thirty-six in the more recent thousand cases. Comparison shows that about four fifths of my cases of neurasthenia have disappeared. Where have they gone? The great majority have been classified in the later records as psychasthenia. Cases which were formerly called neurasthenia have been recognized as cases in which there is such a distinct emotional or intellectual change as to make the diagnosis of psychasthenia more appropriate, and they have been so designated. But not all cases formerly called neurasthenia have been placed in the psychasthenia group. It will be noted that in the recent series of cases the diagnosis of dementia praecox is made sixty-eight times, among which were a considerable number of cases called predementia praecox. While I cannot give exact figures, I should roughly estimate that one-third of these cases would have been designated in my earlier experience as cases of hysteria and some of them as neurasthenia; and still later in my experience some of them would have been called psychasthenia. Probably one half or two thirds of them would have been designated as some form of insanity. I often find in my earlier records the diagnosis of adolescent insanity, which is, after all, not far removed from our present conception of dementia praecox.

I wish especially to call attention in the second group to sixteen cases of constitutional inferiority. Here we have a group of cases, most of which in my earlier experience, I have no doubt, I should have designated as hysteria or neurasthenia or a few as imbecility. The conviction has grown on me more and more that mental inferiority underlies many cases of grave psychasthenia and hysteria; and I look on many of these as cases of constitutional inferiority plus hysteria. The name "moron" is now commonly applied to the slighter degrees of mental deficiency. We have all seen cases that would suggest dementia praecox which did not seem quite pronounced enough to justify that diagnosis, and which have been called by many predementia praecox and by others states allied to dementia praecox. Constitutional inferiority is a condition of deficient intellect along with lowered, deficient or perverted emotional tone and frequently includes cases of potential or predementia praecox or imbecility. There are no definite limits to this classification. It is of great importance to recognize the existing defect, which is constitutional or fundamental in character and which cannot be eradicated or cured any more than imbecility can be cured. The hysterical or other manifestations engrafted on it may disappear, but the underlying condition never does.

There is allied to constitutional inferiority or constitutional defect what is commonly called temperament. Every now and then one sees a psychoneurosis which is chiefly a case of temperament — a thing much to be reckoned with. I recall meeting at a social gathering a bright, intelligent woman who had been a patient of mine some time before, classified as a psychasthenic. I congratulated her on looking so well, and in a joking way asked her if I had not made a pretty fine cure of her. She quickly replied, "You have cured my neurasthenia, but that was only one third of my trouble. I still have the remaining two thirds — my temperament — and you can't cure that."

The differential diagnosis between hysteria and dementia praecox has for many years interested me. I have thought about the subject a good deal, and with my assistant, Dr. George J. Wright, have written

TABLE 3.—REPORT OF THE NEW YORK NEUROLOGICAL INSTITUTE (1916)

House Cases, 2,349.	No. of Cases
Constitutional inferiority	21
Hysteria	48
Neurasthenia	57
Psychoneuroses	99
Total	225*

* Or 9.5 per cent.

a paper on the subject.[1] I find the subject a difficult one. *Vorbeireden* and *Dämmerzustand* (mental torpor or twilight state) of Raicke, along with suggestibility, seemed like diagnostic criteria of value indicative of hysteria. I feel that in some cases this differential diagnosis could be made, and several times it seemed to be of real value. In other cases in which a diagnosis of hysteria was made we were compelled to revise it subsequently and make it dementia praecox. But this difficulty has now largely disappeared. I now recognize that, given a faulty fundamental makeup, in some instances dementia praecox will develop and in others, hysteria. I think it is the experience of all of us who have had opportunity for extensive observation to note that hysterical symptoms

TABLE 4.—REPORT OF THE NEW YORK NEUROLOGICAL INSTITUTE (1916)

Dispensary Cases, 5,754.	No. of Cases
Constitutional inferiority	211
Dementia praecox	101
Hysteria	130
Neurasthenia	373
Psychoneuroses	659
Total	1,477*

* Or 25 per cent. of outpatients.

are really common in dementia praecox. Yet there are a few cases in which a differential diagnosis is of scientific and practical importance, because a purely hysterical condition is one in which there is far greater hope for clinical recovery than in the dementia praecox syndrome.

I have now a strong feeling that in cases which appear on the surface as neurasthenia, psychasthenia and hysteria, but in which after careful investigation organic disease is discovered, an attempt should be made to evaluate the underlying mental status of the patient, especially as a basis of prognosis. This will include a careful examination of social and family relationship and inquiry into the sexual life of the individual. The more this is done, the more I believe

1. Diller, Theodore: A Study of Hysterical Insanity with an Especial Consideration of Ganser's Symptom-Complex; Report of Eight Cases, Jour. Nerv. and Ment. Dis., January, 1909.

we shall discover potential dementia praecox or constitutional inferiority as a condition underlying the psychosis or psychoneurosis. Inquiry into psychoses of various types and into alcoholism will frequently disclose an underlying constitutional deficiency. I believe this is being more and more realized, especially as regards alcoholism.

For the purpose of comparison, I call attention to Tables 3 and 4, taken from the 1916 report of the New York Neurological Institute.

While I realize that it is difficult to compare hospital cases with those from private practice, yet there may be some lesson to be drawn from a consideration of the cases from the New York Neurological Institute. Neurasthenia, psychasthenia and dementia praecox taken together constitute a large group of the dispensary cases — 25 per cent in all. This does not differ greatly from my own percentage. It will be noted that the large number of 373 cases of neurasthenia are diagnosed in dispensary cases and fifty-seven in the house cases.

Despite all the efforts made to delimit hysteria and neurasthenia, these conditions remain and can hardly be made to disappear from diagnostic tables.

It seems that although we may eliminate in one direction, the cases will appear in some closely allied group. But these cases are here, whether we call them neurasthenia, psychasthenia, potential dementia praecox or constitutional inferiority, or something else.

These classifications are useful if they are not taken too seriously; if we bear in mind that every case is a law unto itself, and that there are all kinds of overlapping to be observed, and if we do not worry particularly because we cannot force a particular case into a given diagnostic grouping, for we ought not to even try to do so in all instances.

SUMMARY

In dealing with all the neuroses and psychoneuroses we must be on the sharp lookout to eliminate all sorts of organic disease, and we must examine and reexamine in order to do this, bearing in mind that by the most acute observers cases have been called hysteria which have afterward been seen by the same observers to be grossly organic — for instance, brain tumor.

Hysterical symptoms may appear not only as an expression of various organic diseases, but as a phenomenon of various psychoses and expressions of constitutional inferiority or of temperament. My main point in this paper is that, after having eliminated organic disease, we should examine into our case to determine as far as possible the original constitution and temperament of the patient, remembering that some of these cases are best designated as constitutional inferiority.

Westinghouse Building.

Suicide More Prevalent Among Men than Women.—Figures compiled by the Metropolitan Life Insurance Company show that suicide is more than twice as frequent as a cause of death among males than among females. This is true at all periods of life except at the ages 15 to 19. The same conditions are found to prevail among the white and the colored races. After early adolescence, the white female suicide rate remains practically stationary, never varying very much from about eleven per hundred thousand. On the other hand, the white male suicide rate increases with each age period. The rate is highest at the ages 65 to 74, when it is over eighty per hundred thousand. Suicide is a common cause of death, nearly five times as prevalent as at the age period 20 to 24.

THE TRAUMATIC NEUROSES

WITH SPECIAL REFERENCE TO THEIR MEDICOLEGAL RELATIONS *

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The traumatic neuroses embrace all of the psychoneurotic syndromes which directly follow shock. Under this name one includes especially hysteria, neurasthenia and hypochondriasis that have immediately succeeded a trauma. It is generally agreed, therefore, that this heterogeneous term signifies no disease *sui generis,* but merely a mixture of functional symptoms which are ushered in through the influence of an accident. It does not exclude in the same person other disabilities, mainly surgical, that have resulted from the accident. It does not ignore the possible aggravation by the trauma of previously present cardiovascular-renal or other syndromes. It does not decide the question of dormant nervous symptoms forced into activity by the accident. Unfortunately, also, it does not differentiate between the functional psychoneuroses and brain disorders, like concussion of the brain, which evoke indefinite symptoms resulting from molecular or other definite physical changes.

Not long after 1888, when Oppenheim first used this term though Erichsen years before brought out similar views, it became generally accepted, even though not all were in harmony with his point of view that it represented a specific disease with molecular physical changes in the brain. In recent years, the desire for annuities and compensation for accidents has caused such a misuse of this diagnosis that many physicians have been won over to accept the contention that the traumatic neuroses are merely a collection of imaginative or ideogenous symptoms clustered around a lawsuit. Others again see in it a psychoneurosis which must have been present before, and which has nothing to do with the accident. Hellpach, in Germany, speaks of it as a folkepidemic resulting from their system of annuities. A. Brissaud, in France, coined the word "sinistrosis" to express the fixed determination of a person to secure compensation for having been in an accident, and in the Fourth Chamber of the Tribunal it has been ruled that an incapacity resulting from this obsession does not entitle a workman to ask for the allocation of an allowance (Collie). *Rentenhysterie* and *Begehrungsneurose* in Germany and litigation-hysteria in America are likewise used to express this idea. Moorehead[1] uses the word "traumasthenia."

But the same functional symptoms develop in persons who do not have accidents that involve compensation, and some individuals who after accidents develop a traumatic neurosis never desire and even refuse compensation. Also, notwithstanding a frequently repeated opinion to the contrary, a traumatic neurosis can develop in a person who, before an accident, was absolutely well. The termination of litigation does not always result in a total recovery. My experience, nevertheless, agrees with the experience of those who claim that a large part of the jury awards in our country represent a valuation of the exaggerated rather than the actual symptoms. The intense

* Read before the Section on Nervous and Mental Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Moorehead: Traumatic Surgery, Philadelphia, W. B. Saunders Company, 1917.

contemplation of self resulting from the desire for compensation, the overzealous efforts of interested attorneys, physicians and friends to protract an abnormal mental attitude until the pending litigation is over, and the effort to win the sympathy of the jury by making the most of the litigant's ailments cannot tend toward a true picture of conditions. And since most psychoneurotic persons are unduly emotionally reactive, the affective factors which cluster around litigation and control the actions and social relations of the litigant are often vastly more disturbing to the nervous system than the initial shock of the accident.

IS THERE AN ORGANIC TYPE OF NEUROSIS?

Renewed interest in the traumatic neuroses, aside from the factor of litigation, has resulted from the present great war. Oppenheim[2] reaffirms and amplifies his point of view that after the trauma there is a definite reaction on physiologic functioning which may be either mechanical or physical in action. Either type of causative factor has the same effect on the nervous system. He says:

> There is no doubt that the finer organization of the nervous tissue can be directly and indirectly injured, without the occurrence of hemorrhage, inflammation, degeneration and necrosis. I refer to finer physical occurrences. The influence of this overestimated impulse seems to me to be like the removal of a link in a chain, or of the displacement of molecules, or of an inhibition of tracts, a tearing apart of associated functioning parts, a diaschisis—in short, a condition which is not microscopically demonstrable, which does not represent definite alterations of nervous tissue but which in every case produces conduction inhibitions to motor impulses.

He cites the frequently found vasomotor-secretory-trophic disturbances as a further proof; likewise, the hyperthyroidism which often follows shock of an accident. His experience from the war neuroses has fixed more firmly than ever his belief that we are dealing in some of the traumatic neuroses with an overstimulation of the nervous system with a resultant altered function which is not hysterical, implying thereby a psychogenic origin, or neurasthenic, conveying thereby the idea of an exhaustion origin. His observations concerning reflex paralysis and the flaccid atonic paralysis of amnesic akinesia, differing from the hysterical type, its predilection for the left side, its constancy and often accompanying trophic disturbances represent a brilliant though unsuccessful attempt to isolate a syndrome peculiar to the traumatic neuroses. Regis,[3] commenting on this question, records a sluggishness of gait not extending to paraplegia in the hind legs, among other symptoms observed in dogs that have been subjected to violent explosions. The dogs that died after three or four days did not have any discoverable microscopic lesions of nervous tissue. Sudden deaths under shell fire have been reported from the front without any injury having been received. They cannot, however, be used, as has been done by Farrar,[4] in supporting the view of probable minute changes in the central nervous tissue. It is just as probable that myocardial and cardiovascular disease was the cause.

The war neuroses have, on the other hand, accentuated the views of those who see in the traumatic neuroses only a psychogenetic or ideogenous syndrome. Lewandowsky[5] attacks Oppenheim's hypothesis, most drastically asserting that "a mechanical shock to the nervous system by way of sensory and sensorial tracts is unknown to physiology or pathology." In the discussion of Cassirer's paper before the Berlin Neurologic and Psychiatric Association, Feb. 14, 1916, not only Lewandowsky, but also Schuster, Bonhoeffer and Liepmann objected to Oppenheim's attempt to isolate in the traumatic neuroses a syndrome which was organically produced and, not therefore, hysteria.

Though working as an aurist in a base hospital, Wilson[6] ventures on a hypothesis which presents the same line of reasoning as does Oppenheim. He speaks of three types which he encounters: (1) those with actual nerve deafness; (2) those who recovered hearing, but with fixed ideas of nerve deafness still remaining, and (3) malingerers. I quote the following from him:

> The symptoms associated with loss of hearing from high explosives fall within the group of nerve diseases called traumatic neuroses. In many of our cases, there is a recognized physical trauma to the head or elsewhere received during the period of mental excitement. It is well recognized that traumatic neuroses are apt to occur under such conditions. There is unsteady equilibrium with vertigo. There is a concentric narrowing of the field of vision. In many of our cases, fields of anesthesia were present.

He sets up the following explanation:

> 1. At the synapses, there is a structural discontinuity of the nerves. 2. The results produced by impulses traveling in a nerve depend on the way the fiber ends and not on any differences in the impulses themselves. 3. At the synapses different physiologic systems come in touch with one another and so coordinate action in diverse systems is possible. 4. At the synapses, there is always a spread of nerve impulse and the greater the impulse the greater the spread.

With this basis, Wilson says, we are working on the following hypothesis:

> As a result of high explosive with enormous and sudden pressure in the ear, there occurs a dissolution of the permanent auditory pathway and a spread of nerve impulses into the other adjacent pathways. The auditory impulse no longer reaches its goal, and deafness results. Such a dissolution may occur at any one or all synapses.

His reasoning, though conjectural, may be applied to many of the other symptoms of the traumatic neuroses, such as functional loss of vision, functional paralysis, etc. S. Meyer[7] describes an apathy simulating dementia accompanied by deafness without any central labyrinthine disturbance which he speaks of as a functional inhibition of cerebral activity. This seems to be similar to the Wilson type of traumatic neuroses. Hysteria from shell shock he observed frequently. It was not, however, accompanied by deafness or any profound disturbance of hearing. These cases had nothing in common with his first group of patients, which he considered to be a special type of mental disturbance. It is not a pronounced apathy with a retrograde amnesia producing varied types of pseudodementia such as has been frequently observed in the traumatic neuroses, especially after catastrophes.

The shock hypothesis of Monakow which he calls "diaschisis" seems to me to be a valuable conception.

2. Oppenheim, H.: Die Neurosen nach Kriegsverletzungen, Berlin, S. Karger, 1916; Neurol. Centralbl., 1915, **34**, 514.
3. Regis: Boston Med. and Surg. Jour., 1916, **175**, 22.
4. Farrar: War and the Neuroses, Am. Jour. Insan., 1917, **73**, 716.
5. Lewandowsky: Ztschr. f. d. ges. Neurol. u. Psychiat., 1915, **11**, 703; 1915, **12**, 434-439.
6. Wilson: The Effects of High Explosives on the Ear, Brit. Med. Jour., 1917, p. 353.
7. Meyer, S.: The Nervous Symptoms Following Shell Shock, Ztschr. f. d. ges. Neurol. u. Psychiat., 1916, Orig., **33**, 353.

It resembles, but goes farther than the idea of nerve circuits. It is well recognized that any catastrophic event may stop the brain from receiving any information. Diaschisis, therefore, results, not merely after hemorrhage or thrombosis, as Monakow brought out, through a primarily disturbed brain, but secondarily through a failure of the sensorial pathways to properly influence the brain centers.

AN EXPLANATION OF THE PSYCHONEUROSES

We start, therefore, with the assumption that an acute stoppage of cerebral activity may result after trauma. This need not be structural in origin any more than a syncopal attack premises structural brain changes. But it must be of such a degree that the individual cannot adjust himself to it. This disordered situation brings emotional reactions and its motor responses. If the brain adjusts itself, the emotions subside gradually; if not, the attempt to do so increases the emotional reaction. Such emotional reactions represent the strongest drainings of energy to which the nervous system can be subjected. An emotional complex thus produced by an accident nullifies all efforts of the body to adjust itself, acting similarly to emotional reactions produced by various psychogenic determinants. The body vainly tries to secure an adjustment. The glandular secretory organs work overtime. And there results from their overstimulation the same nonintegrations as are produced by the overactivity of these organs from other causes. An ideogenous factor now stepping into play establishes a vicious circle. It is especially an acute and intense emotion, which in not allowing any time for readjustment, quickly drains off neural energy. It cannot be replenished if any factor connected with the accident prevents, whether it be primitive fear, or desire for compensation, or other wish factors.

Such a draining of energy is probably similar in result to the overactivity of cells which in diaschisis produces a physiologic stoppage of function. This is transient if the cells can replenish their energic substances; permanent, if they become damaged, or if the synaptic connections cannot become reestablished (Sherrington). This draining of energy is typified especially by the clinical syndrome of complete asthenia and need not be marked by any emotional stage. As a rule, however, the ideogenous factors are present from the beginning to exercise their influence on the nervous system, especially the autonomic nervous system. Bivalency of origin is, therefore, generally noted in the traumatic neuroses. The line between stimulation and overstimulation on the physiologic side is hard to establish; likewise we cannot easily differentiate the negative from the positive side of an emotion, a euphoria from a dysphoria, etc. The discrepancies in points of view are due often to the observer overvaluing one valency and neglecting to give the other its proper perspective. Endocrine neurasthenia exemplifies this confusion. Entities should not be raised up which tend to ignore the unity of the entire nervous system.

Once established, emotions functionate and keep up their harmful influence in many ways. "Fixation of neuroses" and shirking and habit reflexes or substitutions are the result. Unconscious wish factors often determine them. And more often the brain defends itself from its enemy by suppressing the content of the emotion. Submerged, it may continue dynamically active and influence the reactions of the individual by surrogations, projections, introversions, etc. But in all these mental processes the cerebral cortex is activated since it represents the adjuster mechanism of the afferent neurokinesis (Dearborn[8]). Pawlow's conditioned reflex studies help us to understand how these psychokinetic equivalents act. And also Adler's[9] organic inferiority conception with the psychic factors it involves is likewise a fingerpost on the road to a complete understanding of the psychoneuroses.

SOME ATTEMPTS AT CLASSIFICATION

Grasset[10] groups the psychoneuroses under: (1) the sensory motor (motor sensitive) psychoneuroses; (2) the sensorimotor (motorsensorial) phychoneuroses, and (3) emotional and psychic psychoneuroses.

1. The classical hysterical traumatisms or traumatic neuroses. Here we find apparent disability from paralysis, paresis or contractures, anesthesia of the various functional types, psychosplanchnic syndromes, circulatory, respiratory or digestive and neurasthenic syndromes.

2. Sensorimotor psychoneuroses. Under this title are included those psychoneuroses in which symptoms on the part of the special senses predominate: visual symptoms, aural symptoms, disturbances of speech and writing of a functional type and various mimicries.

3. Emotional and psychic psychoneuroses. He places here "persons with hyperalgesia and hyperesthesia whose hysterogenic zones generate emotion but no other disability. They are, he says, not only *angogènes* (hysterogenetic) but *angoissantes* (terrifying). They evince the mimic phenomena of emotion—tremble, perspire, shriek, attempt to flee, etc."

Cimbal[11] argues for a more practical classification which will indicate clearly the condition found on examination. (*a*) Acute nervous irritation is not, he says, a traumatic neurosis. (*b*) Acute nervous exhaustion is not neurasthenia, inasmuch as it is not developmental and does not deal with constitutional inferiors.

4. Asthenia describes a general exhaustion more clearly than does neurasthenia. Hysteria is too vague and should be divided into fright neuroses, repression neuroses (*verdrängungsneurosen*), inhibitory neuroses (*hemmungsneurosen*), congenital irritability, moods, psychic spasms and displacements (*verschobenheitszuständen*).

5. He separates from the war neuroses also two organic types of neuroses: (*a*) concussional neuroses of the brain with disturbances of ocular movements, of the visual fields, of audition and of coordination; (*b*) a cerebral compression type occurring from shell shock with spastic hemiparesis without ankle clonus or a Babinski reflex, but with a positive Oppenheim sign. These must not be called hysteria.

From the Italian war front the observations of Bennati[12] are worthy of comment. He considers that the war neuroses are conditioned by two factors, namely, the numerous catastrophic occurrences and extreme exhaustion, producing structural changes, after the hypothesis of Edinger. Other observers conclude, however, that exhaustion is not as important

8. Dearborn: Affective Physiology, Med. Rec., New York, April 8, 1916.
9. Adler, cited by Mayer, E. E.: Am. Jour. Insan., 1914, **70**, 661.
10. Grasset: Les Psychoneuroses de guerre, Presse méd., 1915, **14**, 105.
11. Cimbal: Neurol. Centralbl., 1915, **34**, 710.
12. Bennati: La Etiologia determinata nella nervosi traumatica di guerra, Riv. sper. di Frenat., 1916, **42**, 49.

etiologically as was formerly assumed. In fact, Bonhoeffer[13] expresses great doubt as to whether we are justified in holding to our older conceptions of an exhaustion psychosis.

Farrar[4] concludes that among other things:

1. The reactive group is made up essentially of psychoneuroses which may be divided into (*a*) anticipatory, and (*b*) trench neuroses.

2. The type of trench neuroses is the condition called "shell shock," which consists of a transitory concusion syndrome followed by a more or less protracted neurotic phase.

3. Trench neuroses occur usually in unwounded soldiers. There is no satisfactory evidence that trauma plays a part in their causation. There are well qualified observers who hold that, as a result of contemporary military experience, the concept of the so-called traumatic neuroses should be abolished.

4. The drift of opinion is unmistakably toward the psychogenic basis of war neuroses of all types, including shell shock. Even in the initial stage marked by a twilight state of some duration, there is evidence that the psychogenetic element may have as great, if not a greater, rôle than the item of mechanical shock, although this is more important.

Regis[14] considers three groups of emotionally produced psychoses:

1. Oneirism with morbid dreams which is akin to the second stage of hypnotism and which increases to hallucinatory oneirism.

2. Mental confusion types, with obtusion, disorientation, agitation or torpor.

3. Amnesia types: (*a*) The amnesia of cranial traumatisms is lacunar, retrograde, antegrade and actual. (*b*) Battle amnesia is complete with terrifying hallucinations. Regis does not refer to hereditary types, but to emotionally predisposed, impressionable persons. He is in accord with our contention that the neuropathic and psychopathic cannot be separated.

INCIDENCE AND RECOVERABILITY

Because of the various interpretations as to what constitutes a traumatic neurosis, as to how much is due to accident and how much is due to predisposition, and because of the varied laws for compensation, statistical prognoses have only a relative value. Naegeli,[15] a Swiss, states that 93 per cent. return to work after an adjustment. His statistics are at variance with those of others. Returning to work does not necessarily mean a return to health. According to recent statistics (Birnbaum[16]) of psychoneurotics in the German army, 9.5 per cent. were returned to active service, 35 per cent. were able to do garrison duty and 55.5 per cent. had to be returned home. Wimmer[17] comments on the increase of neuroses since the German pension system went into effect, and considers that the law and not the individual should be blamed. Sachs[18] favors no compensation, and considers that there would be no bad prognoses were no gain attached to the claim of disability. Billström[19] admits that a traumatic neurosis without damages involved has a better prognosis and presents less severe symptoms than a traumatic neurosis in which pecuniary damages are applied for. He considers the prognosis worse among the lower classes and among alcoholic types, and finds that a second accident is always worse than the first. Meltzer[20] asserts that an annuity or compensation and accident go hand in hand. He cites Brand's observations of the Austrian pension system established in 1895 to the effect that from 1885 through 1894 no cases of traumatic neurosis following accident were described, whereas from 1895 through 1904, there were forty-six cases. Laudenheimer[21] divides psychoneuroses among the soldiers into five varieties: (1) depressive-anxiety neurosis, (2) neurasthenia, (3) hysteroid, (4) epileptoid, and (5) psychopathic types. He finds that patients with hysteria were without predisposition and were most severely injured soldiers (shell explosions, etc.). The first class became again fit for service, and 60 per cent. of the second class returned to the front. We cannot follow such attempts at prognostic classifications. Each case must be judged by itself, as endogenous and exogenous determining influences vary considerably independently of the diagnosis.

We need hardly call attention to the fact that were pension and compensation not involved, physicians would not bother to comment on the traumatic origin of a neurosis. Writers often quote Zingerle,[22] who reports on the Messina earthquake that he did not find a single case of traumatic neurosis after the shock. Also Bianchi examined, immediately after its occurrence, 500 persons who were in this great catastrophe and found no traumatic neurosis, yet Neri[23] observed many psychoneurotics among the survivors. Stierlin,[24] three months afterward, examined 226 victims, and 20 per cent. of them had various objective symptoms of traumatic neurosis. He found also that they had no psychoneurotic symptoms before the earthquake and no history of predisposition. This period of latency, giving the mind time to develop the fright and fear factors of the episode, is considered important by him in the etiology and prognosis. Yet, in his report of the catastrophe, he enumerates many who immediately developed a psyschogenetic (traumatic) neurosis from the intense fear state engendered and in whom ideogenous factors seemingly had no chance to develop.

Dercum[25] considers that only hysteria—an innate state—is embraced under traumatic neurosis, that the symptoms owe their origin to suggestion, that trauma unconnected with fright plays no rôle, and that in hysteria evoked by an accident and not involving litigation, the interval between accident and hysteria is unusually short, the symptoms rarely pronounced, and these, as a rule, fade and disappear spontaneously or readily under the suggestion of treatment; unless indeed, the treatment and the attitude of the physician and others is such as to confirm the belief in injury.

Suggestion by the physician is not, however, always the producer of anesthesia as Dercum, following Babinski, maintains. Accidents to railway employees do result in traumatic hysteria without litigation or compensation being involved, as I have personally observed, and postlitigation results of traumatic hysteria without other complicating disease are not

13. Bonhoeffer: Allg. Ztschr. f. Psychiat., ref. Ztschr f. d. ges. Neurol. u. Psychiat., ref., 1916, **13**, 3.
14. Regis: Psychic and Neuropsychic Affections of the War, Boston Med. and Surg. Jour., 1916, **175**, No. 22.
15. Naegeli: Cor.-Bl. f. schweiz. Aerzte, 1910, No. 2.
16. Birnbaum: Ztschr. f. d. ges. Neurol. u. Psychiat., 1916, **12**, No. 4, 326.
17. Wimmer: Deutsche Ztschr. unf. H. Krankheiten, 1913, **49**, 133.
18. Sachs: Unfallsneurosen, Breslau, 1909.
19. Billström: Berl. Klin., 1914, **26**, 1.
20. Meltzer: Aerztl. Sachverst. Ztg., 1914, **20**, 19.
21. Laudenheimer: München. med. Wchnschr., 1915, No. **38**.
22. Zingerle: Monatschr. f. Unfallheilk., 1911, No. 9.
23. Neri: Rev. Neurol., 1909.
24. Deutsch. med. Wchnschr., 1916, No. 1, p. 6; The Medical Result of the Catastrophes of Courriers, Haenm, Valparaiso and Messina, Berlin, 1909.
25. Dercum: Hysteria and Accident Compensation, Philadelphia, G. T. Bisel Company, 1916.

always favorable. But it is true that the plaintiff rarely submits himself to treatment and that the symptoms often disappear after litigation is terminated. We do not agree that the type of hysterical disability found in the traumatic neuroses is always accompanied by the so-called character anomalies of congenital hysteria. They often were previously normal, and it is only guesswork to assume that a previous neuropathy existed.

However, we are in accord with his general indictment of the pernicious influences of litigation, and recognize that a large number of claimants for damages are obsessed with the desire for a large monetary compensation. We also agree that the German system of pensions or annuities makes traumatic hysteria a more hopeless malady than with us, since a permanent dysphoria tends to be produced; but in our system the long months of waiting for monetary recompense serves to fix the neuroses almost equally as much.

MEDICOLEGAL CONSIDERATIONS

The right to recover damages for injury due to the negligence of others is incontestable. The increase of industrial machinery and the growth of rapid transportation have filled our courts with suits to recover enormous damages for minor injuries. Street railway corporations yearly pay out from 5 to 10 per cent. of their gross receipts in settlement of claims growing out of accidents. Many attorneys and a few physicians devote practically all their time to this kind of work. Unconscious malingering, manufactured symptoms, exaggeration of those really present, false interpretations of those present, are daily encountered in our courts. Unjust awards result on the part of a bewildered jury.

1. Our method of jury trials in which biased opinions carry as much weight as do more careful, if not more competent ones, are unfair. How to remedy it is not, however, clear. A jury of physicians is unobtainable, and even if it were, would simply multiply the number of physicians in the employ of legal firms and corporations, and the better element of the profession could not be induced to serve. A commission of physicians to report to the judge, whose charge to the jury would be based on their findings, would not secure any betterment. I am convinced that a commission on which each side has appointed a representative, and the court a third member, also fails for obvious reasons to give good service. As Sir James Stephen, K.C., says in his "History of Criminal Law": "The judge and the jury alike are and ought to be, instructed only by witnesses publicly testifying in open court on oath."

2. Since our common law permits each side in litigation to secure as many experts as they desire, the legal firms which specialize in accident cases and others, also, by employing physicians on contingent fees, sometimes unduly large, have always at their call physicians who, sharpened by experience, give their testimony the proper bias to influence the jury. This conspiracy of interests is reprehensible.

A change of law, which would give only the court the right to call experts is impossible to secure, and even if brought about, would not prevent the use of politics by those interested in securing the appointment of the "right kind" of physician. If it were possible to create a law which would have the compensation of all experts a matter of court record, by making it a part of the expenses of the trial, some improvement over present methods would, however, be attained.

3. Jury awards with us seem to place a premium on exaggeration, and a proper staging of the dramatic possibilities of the client secures an increased verdict. Awaiting for years a settlement nullifies all efforts to bring a claimant for damages back to usefulness, and the psychic effects of not desiring health, together with the bringing on of postural spasms and contractures through fixed positions, often in themselves do much harm. The German system of an indemnity of two thirds of a person's wages after the fourteenth week does not remove these factors. The Danish system of a cash settlement is different from ours in that physicians, not juries, judge the matter, and they accord the claimant a small daily amount until nine months have elapsed when they decide on his compensation, and one and a half years later give a further and final settlement if he has not recovered.

One great suggestive influence in litigation is the blanket indictment of complaints introduced by the attorney. The averment in it that John Doe is a hopeless nervous wreck is read by the plaintiff before he signs it, and the cooperation of a physician who agrees to the truth of such a statement helps to fix this idea in the plaintiff's mind.

4. Working, however, with our present methods I would suggest that all court testimony of physicians be placed on file by their county societies. Publicity would tend to stop a certain class of medical testimony. It would not prevent ignorant or mistaken testimony, but bought testimony and substituted diagnoses would be less likely to be offered.

5. A physician finds great difficulty in securing an opportunity properly to examine a claimant for damages if he is not retained by the claimant's side. The examination may be requested at the attorney's office in the presence of a "runner" who cooperates in the examination. The plaintiff's physician is utilized to suggest both to the plaintiff and to his colleague; and a second examination is often refused. Sir John Collie[26] did a great service in England when he insisted that he be given the opportunity for examination without the presence of "runners" and friends, and, if it was an ambulatory case at his office, where he had at hand all instruments of precision. He secured a legal decision, which was affirmed by the higher courts, that a "solicitor's office is not in ordinary circumstances a proper place at which to hold a medical examination of a workman."

6. Medicolegal opinions should never be based on subjective symptoms, and only objective symptoms should be utilized or permitted in making a diagnosis in court. The subjective symptoms are not based on actual facts. They are not the findings of the physician, and they cause the physician to be unduly influenced. I have known physicians to base a diagnosis of epilepsy on the spasms and spells of somnambulism that were manufactured for him; or to base a diagnosis on unconsciousness supposed to have followed an accident which later was shown never to have taken place, or to diagnose "brain abscess from trauma" from a subjective vertigo and head pain and a bradycardia which was familial. Such mistaken judgments would be avoidable if the physician dealt only with facts.

7. Hypothetic questions will continue to be given. Distorted medical facts, exclusion of important symp-

26. Collie, Sir John: Malingering, London, Edward Arnold, 1913.

toms, and overemphasis of minor ones make them generally of no value.

If the physician has examined the injured person, he should refuse to answer any hypothetic questions unless they included his objective findings, and his answer should be predicated on them. If the injured person could be examined, and the physician has not done so, the court would probably refuse to permit him to render an opinion. The physician should also insist that the symptoms which are the direct result of the accident should be separated from those which are not or probably are not due to the trauma. Probabilities and possibilities in prognoses should also be definitely separated in any opinion rendered. The law does not require physicians to assume that medicine is an exact science, and honest physicians often do themselves harm in court by being too positive. Often, however, positive statements dishonestly offered secure a bigger verdict for the claimant. Positive prognoses in traumatic neuroses are generally impossible unless the physician has personal knowledge of all medical, familial and social factors. He should, therefore, never give opinions based on hurried examinations or imperfect knowledge of environmental factors.

I am aware that the expert is required to accept as true the evidence of the witnesses incorporated in the hypothetic question. But he is permitted to qualify his answer in order to make it plain that he can have no expert opinion on evidence which does not agree with his objective findings, and he should never be satisfied with categorical answers.

8. No statistics concerning prognosis should carry much weight in court because of the personal equation of the nature of the accident and the social status of the patient, and the different groupings found in statistics and variations in the laws of different countries. The future of each psychoneurotic patient must be determined separately by studying his social habits, age, nature of work, intelligence, emotional complexes, etc., as well as the kind of accident and diagnosis offered. In court, since much of this evidence is not in the hands of the expert, his opinion is to that extent defective. But more defective still is the opinion rendered on the appearance of the patient, subjective symptoms and the sympathies aroused by the litigation. In general, however, the physician is not truthful who renders an opinion that a traumatic neurosis is never a recoverable disease.

9. Perhaps, since the postlitigation results are often so radically different from what is claimed, interested corporations should work to secure a law giving them the privilege of an examination at any future time. The results of such reexamination, if it was revealed that the compensation was based on false claims, should empower the court to reopen the case. I was once interested, for instance, as a witness against a claimant for damages because of inability to use his arm. His physicians testified to a brachial plexus paralysis. I denied this because of no objective findings. The same day after being awarded damages he was using his arm, but the court refused to reopen the proceedings.

10. The need for a more elastic system governing accident compensation is plain. The medical profession must purge itself of some of its mistaken policies, and be more exact in its diagnoses, before we can expect the legal profession to better our position in the courts. The physicians and surgeons in Leeds, England, who consult before the trial and make it an organization matter that a member shall give full and impartial testimony, have solved much of the problem. Let us hope that our medical societies may at no distant time establish similar standards of honor and professional conduct.

Jenkin's Arcade Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FRY, DILLER AND MAYER

DR. H. T. PATRICK, Chicago: I make a diagnosis of neurasthenia less frequently than Dr. Diller in his second thousand cases. Many cases are too abnormal to be explained simply by fatigue. In some there is constitutional inferiority; in some a decidedly abnormal state of the emotions. Thus we get into something beyond neurasthenia. I make a diagnosis of hysteria infrequently and that of psychasthenia frequently. I think my indeterminate cases would show a higher proportion.

DR. D. S. BOOTH, St. Louis: These patients with so-called traumatic neurasthenia present a puzzling variation, one day in court appearing grave, and several weeks, or possibly days, later, perfectly well. To do justice to these patients we must give them far more attention than we do. These cases should be considered and pronounced on by experts, who alone should give expert testimony. I remember the testimony of a local general practitioner that had more weight with the jury than that given by imported "paid experts." The patient had had Bell's palsy, and the physician contended that it was due to a hemorrhage into the brain. His knowledge of the nervous system is indicated by his testimony that "the third, fourth, fifth, sixth and seventh cranial nerves came out onto the face in the temporal region." Publicity should be given to the testimony of physicians in these cases and, possibly, as asserted by the author of this paper, the evidence should be presented to the local county medical society and then published, so that more careful statements in court would result.

DR. ALFRED GORDON, Philadelphia: Dr. Mayer presented the subject in a most excellent way, with one exception, and that is as to the question of subjective symptoms. If, for example, a woman is injured in a street car and has no objective manifestations, yet cannot sleep, is in a constant state of fear and anxiety, is restless and depressed, is it fair to assume that there is nothing the matter with her simply because there are no external evidences of injury? There are cases in which long after settlement the persons are still sufferers. This is the experience of every impartial observer. I don't think it will be fair, generally speaking, to deny compensation only because there are no objective symptoms.

DR. A. W. IVES, Detroit: Even if there are no objective symptoms, we ought not to refuse to appear in court. There are cases with practically no objective symptoms which have gone on from bad to worse, even after receiving compensation. Compensation by no means always effects a cure. Many persons, after being well compensated, remain psychasthenics all their lives.

DR. D. I. WOLFSTEIN, Cincinnati: My experience tells me that there is a general neurasthenia on a purely physical basis; cases in which there is not the slightest ground for suspecting either a constitutional inferiority or any abnormal mental state. Many apparently perfectly well balanced people mentally, who up to a given time were also physically capable, and who felt no other than physiologic fatigue, are suddenly surprised and saddened beyond measure by the discovery that they can no longer work as before, or find the same *joie de vivre*. Pathologic fatigue has supervened, and that is the prime factor in neurasthenia simplex. There is such a type, and it is, in my opinion, due to some as yet undiscovered toxic factor. Dr. Diller has called our atttention to his physical state after what might be called a strenuous day in the life of a Pittsburgh neurologist. This I should not term neurasthenia, but a perfectly earned physiologic fatigue. What is characteristic of neurasthenics is their inverse type; they are tired when the day begins; wake up tired, and as the day progresses, brighten up, so that they feel best in the evening, or at night. They hate to see a new day begin.

In regard to the traumatic neuroses, certainly there is a group of cases wherein damage has followed, even though no sign of organic change has been found. On the other hand, we may not always pay too much attention to the organic signs. Many persons get large awards because there is restriction of the visual field, or because one can stick pins into them. Nothing is more misleading than the disturbances of motion and sensation which may appear and disappear in the neuroses. It is a difficult question and each case must be individually judged.

DR. TOM WILLIAMS, Washington, D. C.: The discussion has misled as regards what Dr. Mayer states concerning subjective and objective symptoms. We need to differentiate etiologically by determining if psychogenetic factors are present or not. Although it is not simply a medicolegal problem, yet in the District of Columbia no compensation can be given unless there is proved physical injury. It is not unusual now for the plaintiff's and defendant's physicians and lawyers to agree to refer a case for impartial neurologic survey and abide by the referee's adjudication. The best procedure could be settled by general medical opinion. So I suggest that Dr. Mayer embody his ideas in the form of a resolution, either that the testimony of physicians be drawn up and filed with their respective medical societies, or that physicians should only appear in court and testify after consultation over the case, as in Leeds, England.

DR. A. L. SKOOG, Kansas City, Mo.: There is one type of neurasthenia that is not, properly speaking, neurasthenia. This is in the individual with lowered vital functions due to alcoholism in the parents or prenatal influence. I have seen a number of cases in which one could trace the etiology to heredity. One can find neurasthenia and disturbance of the nervous system covering short or long periods. In laboratories there are tests for activity of the tissues, such as the biometer to measure carbon dioxid elimination. Carbon dioxid is found to be given off by the nerve cells and fibers at a comparatively greater rate than from other tissues. This fact may be utilized partially to account for the neurasthenic syndrome.

DR. M. S. WOODBURY, Clifton Springs, N. Y.: The type of diagnosis that will direct us to etiology is what we are looking for. I have used as a general classification for practical purposes, (1) fatigue neuroses; (2) affective psychoneuroses, that is, those secondary to psychic trauma; (3) secondary psychoneuroses, with physical foundation, such as infection, thyroid disease, gastro-intestinal states, etc. These types may occur in combination. The main point is that, admitting that most of them are secondary compels us to name the elements which in our judgment are primary.

DR. C. R. WOODSON, St. Joseph, Mo.: Many of these cases of neurasthenia are honestly such. The patients are especially susceptible to suggestion, and the suggestions of the attorney will, in the end, make confirmed neurasthenics. For many of these people adjustment of damages is the best remedy. In regard to symptoms, there is no difference in the symptoms of ordinary and traumatic neurasthenia. The symptoms in traumatic cases are long drawn out. The neurasthenic loses initiative, and takes less and less interest in things, accentuating every ache or pain, hypersensitive, wanting in everything that makes life pleasant, and with mind centering constantly on self.

DR. GEORGE A. MOLEEN, Denver: I should make a distinction between fatigue as such and neurasthenia as such. One speaker mentioned fatigue in the morning, which decreased toward night. A high blood tension will conform to this type of syndrome. The second type is usually deficient in hemoglobin content. Many conditions associated with high blood pressure or anemia, therefore, establish fatigue on the slightest stress. The increase of the hydrogen-ion content will increase fatigue, as is the case in a high altitude, where the subject is not able to do the same amount of work as he can in a low altitude.

DR. BERNARD SACHS, New York: Dr. Diller's tables impress us with the fact that we have made some improvement. Twenty-five years ago we did not know much about dementia praecox and we did not know about psychasthenia. We are diminishing the cases of neurasthenia, but we still use that title for patients who develop all sorts of neurotic symptoms on the basis of exhaustion—mental rather than muscular or physical.

Dr. Mayer gives us an important medicolegal problem, in view of the compensation laws. We are going to have plenty of trouble if we include the traumatic cases, and we must decide seriously our position when we have to give testimony. The subjective symptoms may be as genuine as the objective, but one can never give testimony that there is an organic lesion, based on subjective symptoms. Often I refuse to give an opinion until the patient is brought to the hospital and kept there, especially where the nature of epileptoid or hysterical attacks is to be determined. It is not the question of indemnity that troubles workingmen so much as the fear that the accident will interfere with the ability to work and to earn a livelihood. Sometimes this fear disappears, but often it remains as a distressing symptom. We must be careful about the stand we take.

DR. THEODORE DILLER, Pittsburgh: There is another diagnosis which I sometimes make which should have been included in the table, and that is asthenia or atonia, to indicate general lack of vital tone. I feel that profound hysteria and dementia praecox are very much the same at the bottom. I have abandoned attempting to differentiate the diagnosis in many of these cases.

DR. E. E. MAYER, Pittsburgh: In answer to Dr. Gordon's inquiry I believe he misunderstands my conception of the objective symptoms, though I thought it was the common one. I thought that the definite evidences of abnormal functioning of the autonomic nervous system—the tachycardia, dilated pupil, the dermography, the fibrillary tremors and also the signs of motor and nerve irritability—which we find are objective signs. The physician personally observes what is objective. The same is true on the mental side. Dr. Williams has expressed this aspect clearly. If I personally observe delirium, a phobia, etc., it is objective. But how can a physician in a medicolegal case make a positive diagnosis and prognosis for the court on symptoms told to him? What right has he to have an opinion in court concerning reported fatigue, sleeplessness, headache, dizziness, roaring in the head, etc., unless he has objective symptoms to back up an opinion? And did Dr. Gordon or anyone else ever see a so-called neurasthenia which, if an actual one, did not present such objective symptoms?

Much of neurasthenia is asthenia. The entire body is involved, not only the nervous system, and generally too the nervous deficit is not even primary. Constitutional inferiority and maldevelopmental types are different from an acutely arising exhaustion due to either endocrinal or toxic factors. If we speak of asthenia or nerve imbalance, or use some similar expression, we never forget that we have not made a diagnosis, and that we must ferret out the origin. This applies to hysteria too. If we could only drop the word! Inhibition or substitution or situational neuroses, psychogenia, functional neuroses, even psychoneurosis would serve better. Then there are the occupational neuroses. Why did not Dr. Diller mention them separately from his neurasthenic type? At Clifton Springs Sanitarium, for instance, I notice they classify more occupational neuroses than they do of any other type of psychoneuroses. Why, I don't understand. Writer's cramp, for instance, is not ordinary neurasthenia. I know Dr. Diller sees such cases. Where does he group them and why?

Typhus Fever in Turkey.—Typhus fever in 1915 caused the death of some 200,000 to 300,000 people in Turkey. The government, instead of cooperating with foreign medical missions as the Serbian government did in a similar emergency, sent their own physicians to cope with the disease, and of these several hundred took the disease and died. In the Erzerum region, where, on a conservative estimate, between 60,000 and 100,000 died, soap, water and fuel were almost impossible to obtain during the epidemic. Three of our American board physicians in Asia Minor gave their lives to this disease.—A. R. Hoover, M.D., *The Survey*.

OBSERVATIONS ON SURGICAL SHOCK

A PRELIMINARY NOTE *

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At the request of the Committee on Physiology of the National Research Council, a cooperative investigation of surgical shock has been instituted in a number of physiologic laboratories throughout the country, and one preliminary report has already been published in THE JOURNAL.[1] We have selected as our part in this investigation three problems: (1) the bearing of excessive and prolonged secretion of epinephrin on the production of shock; (2) the relation of acidosis to shock, and (3) the oxidative metabolism in shock.

While pressure of other duties has prevented the completion of these studies, we have obtained data which are of sufficient interest for publication in the form of a preliminary note.

EPINEPHRIN AND SHOCK

The condition of "surgical shock," unless associated with extensive hemorrhage, is always the result of prolonged and severe sensory stimulation. As stimulation of sensory nerves induces discharge from the suprarenal glands, it may be assumed that the rate and duration of secretion is proportional to the intensity of the stimulus. Whether a prolonged condition of excess of epinephrin in the circulating blood can produce shock is one of the questions we have attempted to decide.

The experiments were conducted under ether anesthesia. Cats and dogs were employed. Respiration and arterial pressure were recorded. Epinephrin (adrenalin chlorid solution, Parke, Davis & Co.) of various strengths (usually 1:10 and from 0.5 to 1 c.c. per minute) were infused into the femoral vein, in some experiments at a constant rate, in others intermittently. The blood pressure was thus maintained at a very high level for a period of from one-half hour to two hours. Then the administration was discontinued. Careful observations were made at frequent intervals during and following the epinephrin administration. In none of the experiments did symptoms of shock appear. The only definite symptoms observed were those of edema of the lungs and acute cardiac dilatation. The majority of our animals died suddenly of the latter cause.

We conclude that prolonged excessive secretion of epinephrin (if it occurs under pain) is not a critically important factor in the production of shock. It is therefore improbable that surgical shock is a result of excessive secretion of the suprarenals secondary to sensory stimulation.[2]

THE RELATION OF ACIDOSIS TO SHOCK

It may be recalled that some years ago a theory of shock was put forward from this laboratory which assigned the development of the condition largely to decrease in the carbon dioxid content of the blood resulting from the excessive breathing induced by ether, by pain and by fear. Since that series of papers was published, development of knowledge regarding the relations of carbon dioxid in the blood has been rapid and has laid stress first on alterations of the hydrogen-ion concentration involved and recently on alterations of the alkaline reserve. Any one discovering now for the first time that in shock the blood contains less than the normal amount of carbon dioxid would infer from present conceptions that shock involves acute acidosis. The occurrence of acidosis in connection with shock was in fact recognized in the series of papers referred to above.[3] It appeared to us important to investigate further the relations of acidosis to shock and to the excessive breathing induced by pain, and by ether.

Our experiments were carried out on ten dogs. The anesthetics used were ether, morphin, chloral and chloretone (each alone, not in combination). After a control period of from two to three hours under anesthesia, shock was induced by exposing and manipulating the intestines. In all cases the blood pressure, respiration and physical signs were observed. Low arterial pressure and absence of reflexes were taken as indications of shock.

At uniform intervals throughout the experiments, about 5 c.c. of blood were withdrawn from the carotid and collected in a test tube under a layer of liquid petrolatum. Without delay a part of this blood was analyzed for its carbon dioxid content. Another part (whole blood, not serum) was saturated with (human) alveolar air containing about 5.5 per cent. of carbon dioxid and analyzed for carbon dioxid in order to determine the "alkaline reserve" as the index of "acidosis." Samples of alveolar air were collected from the animal at frequent intervals by the Higgins-Plesch method, and the alveolar carbon dioxid tension was determined. The methods of blood, gas and alveolar air analysis employed were those described by Henderson and Morriss.[4] In two experiments the respiratory exchange (oxidative metabolism) was determined by the Douglas bag method.

Morriss[5] has recently shown that administration of ether induces a fall in the alkaline reserve as determined by the Van Slyke method, and our observations corroborate this. In all of our experiments with (open) ether anesthesia there was during the first hour the usual excessive breathing and a sharp fall both in the carbon dioxid content of the arterial blood and in the carbon dioxid capacity of the blood, followed for several hours thereafter by a less rapid but distinctly progressive and almost parallel fall in both measurements. The alveolar carbon dioxid also followed a closely similar course. There was a corresponding degree of "shock," as judged by fall of arterial pressure and absence of reflexes.

In contrast, in one experiment in which ether was administered by a rebreathing method, we found that when excessive elimination of carbon dioxid was thus in part prevented, both the carbon dioxid content, and the carbon dioxid capacity (alkaline reserve) of the blood as well as the vitality of the subject were much less reduced than under "open" ether conditions.[6]

* From the Physiological Laboratory of the Yale University School of Medicine.

1. Pike, F. H., and Coombs, Helen C.: The Relation of Low Blood Pressure to a Fatal Termination in Traumatic Shock, THE JOURNAL A. M. A., June 23, 1917, p. 1892.

2. Recent observations of Mann (THE JOURNAL A. M. A., Aug. 4, 1917, p. 371) indicate also that deficiency of epinephrin (excision of suprarenals) does not produce shock.

3. Henderson: Am. Jour. Physiol., 1910, **27**, 174.

4. Henderson and Morriss: Jour. Biol. Chem., 1917, **31**, 217.

5. Morriss, W. H.: The Prophylaxis of Anesthesia Acidosis, THE JOURNAL A. M. A., May 12, 1917, p. 1191.

6. Bryant, John, and Henderson, Yandell: Closed Ether and a Color Sign, THE JOURNAL A. M. A., July 3, 1915, p. 1.

In the animals under open ether the institution of shock producing procedures had, and indeed could have, little additional effect in producing acidosis, owing to the intensity of this condition already produced by the anesthetic and its mode of administration.

In view of this fact we turned to experiments under morphin (one experiment), chloral hydrate (one), and chloretone (two), since all of these drugs depress respiration and tend to produce a hypercapnia.[7] In this connection we would call attention to an observation of Underhill, Blatherwick and Goldschmidt,[8] which seems to us to suggest that morphin (by means of hypercapnia?) causes a mobilization of the body's alkali.

In the experiment under morphin narcosis, there was no fall, indeed a slight rise (2 per cent.), in the carbon dioxid content and the carbon dioxid capacity of the blood during a preliminary or control period of two hours. Shock procedures were then instituted and were followed by a rapid and progressive acidosis — the carbon dioxid capacity falling to 31 per cent. — together with the usual excessive breathing, fall of arterial pressure, and disappearance of reflexes, ending in death after two hours.

In an experiment under chloretone anesthesia, the carbon dioxid capacity of the blood fell during the preliminary period of three hours only from 48 (practically normal for a dog) to 43 per cent. Shock was then induced. One and one half hours later the carbon dioxid capacity of the blood had fallen to 30 volumes per cent. The animal died half an hour later.

These observations raise a crucial question as to the nature of the relation between the hyperpnea of ether excitement and of pain and the accompanying decrease of carbon dioxid combining power in the blood. Which is cause and which is effect? The acapnia theory assigned a primary rôle to the hyperpnea, while the acidosis theory now current would make the hyperpnea merely secondary. Does the alkali of the blood control the carbon dioxid or the carbon dioxid the alkali? In most forms of acidosis the former is the case. In shock, however, the latter may in part at least be the true sequence. It may be recalled that in experiments on shock previously reported from this laboratory it was found that when excessive loss of carbon dioxid was prevented by rebreathing procedures, the carbon dioxid content of the blood was only slightly lowered, and shock either did not result or was much reduced in intensity. These facts suggest that the acidosis of ether anesthesia is compensatory to or a result of the acapnia produced by the hyperpnea of ether excitement.

Apparently the reduction of the carbon dioxid content of the blood by the excessive breathing under pain or ether excitement results either in loss of alkali (to the tissues?) or a formation or retention of other acids. This acidosis, or reduction of alkaline reserve, whatever its details, is at least in respect to respiration clearly of a compensatory character, for otherwise the intense acapnia would always quickly result in a fatal apnea, as in fact it often does. It is particularly noteworthy in support of this conception that in the experiment with ether in which the animal was made to rebreathe through a long tube, thus keeping the alveolar carbon dioxid tension at a nearly normal level, the rate and degree of ether acidosis were correspondingly decreased.

7. Henderson and Scarbrough: Am. Jour. Physiol., 1910, **26**, 274.
8. Underhill, Blatherwick and Goldschmidt: Proc. Soc. Exper. Biol. and Med., 1917, **14**, 83.

THE OXIDATIVE METABOLISM IN SHOCK

In the metabolism experiments in which observations of the oxygen consumption and carbon dioxid elimination were made before and after the production of shock, we found that the condition of shock involves a profound depression of metabolism, the oxygen consumption falling 45 per cent. in one experiment and 50 per cent. in another. This depression of metabolism is progressive, and ends in death.

The introduction of the gas mask in warfare has accustomed men to a form of apparatus with which rebreathing can be readily arranged. Fortunately it is easily applicable on the only field where sufficient human material is regularly available for the study of shock. By this means we hope to be able at last to get an adequate test of the very practical question, Will rebreathing prevent or decrease the development of shock in severely wounded men as it does in animals under experimental conditions?

For those already in shock and breathing feebly, rebreathing involves a dangerous limitation of oxygen. In this condition, the administration of percentages of carbon dioxid approximating the normal alveolar air (by the same method that oxygen is usually given) is the measure which in the light of ten years' work in this laboratory is certainly worthy of trial.

BOTULISM

THE DANGER OF POISONING FROM VEGETABLES CANNED BY THE COLD-PACK METHOD *

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The frequency with which food poisoning is caused by the presence of the toxin of the *Bacillus botulinus* is probably very much greater in this country than has been generally believed, and the fact that the toxin may be formed not only in foods of animal origin but also in certain vegetables and fruits has added much to the importance of recognizing its existence.

A review of the available American medical literature for the past twenty years has shown that there have been at least eleven recorded outbreaks of botulism in the United States during that time, and that a least fifty-two persons have been ill and thirty-two have died from this type of food poisoning.

In a personal investigation[1] of unrecorded cases of food poisoning which have occurred on the Pacific Coast during the past six years, I have located eleven more outbreaks of botulism in which twenty-nine persons were ill and twenty-three died, and in three of these I succeeded in establishing the diagnosis of botulism by the isolation of the *B. botulinus* from portions of the discarded food. In all, therefore, there have been at least twenty-two known outbreaks of botulism in the United States during the past twenty years (Table 1) in which eighty-one persons have been ill and fifty-five have died, a mortality of 67.9 per cent.; and of these twenty-two outbreaks, eighteen have occurred on the Pacific Coast, seventeen in California, and one in Oregon. It is extremely probable that there have been many more outbreaks of botulism

* Aided by a grant from the California State Council of Defense.
* From the Division of Medicine of the Leland Stanford Junior University School of Medicine.

1. The details of the clinical cases and of the experimental work will appear shortly in a monograph entitled "Botulism: A Clinical and Experimental Study."

which have passed without recognition, and that if it were possible to follow up all cases of food poisoning in which the patients recovered, and all fatal cases in which the death certificates give the cause of death as ptomain poisoning or bulbar paralysis, a very large group of cases would be collected.

An important feature of the recorded cases in this country and of those which I have collected is the relatively small number in which the poisoning was caused by food of animal origin. In eighteen outbreaks in which the source of the poisoning was recognized, one was due to spoiled beef, one to minced chicken, one to canned pork and beans, one to tamales, one to sausage (wienerwurst), and two to bottled clam broth; but in all the rest, eleven in number, the food which was responsible for the poisoning was of vegetable origin, one outbreak being caused by home-canned pears, one by home-canned apricots, one by home-canned corn, one by home-canned asparagus, one by commercially canned beans or spinach, and six by home-canned string beans.

In a series of experiments with four strains of the *B. botulinus*, I have been able to show that the botulinus toxin may be formed in a considerable number of vegetables and fruits. In a previous report,[2] it was recorded that the toxin could be formed in mediums prepared from canned string beans and canned green peas, and in later experiments[1] which are not yet recorded in detail, it was found that that toxin may also occur in mediums prepared from green corn, artichokes, asparagus, apricots and peaches, to which no trace of animal protein was added.

As a result of the shortage of the world's food supply at the present time, there has been a widely advertised propaganda urging that sufficient vegetables and fruits be canned at home to provide for the winter's supply of food. There have been numerous articles in the daily press and in magazines in which the federal authorities have advocated the use of the cold-pack method of canning vegetables and fruits. Various methods of sterilization are described in these reports, but the one which can be most readily adopted by the housewife is that of heating the filled jars in a wash boiler at the temperature of boiling water. Tables are given in which the time necessary for heating the different vegetables and fruits is stated.

In order to test the efficiency of the cold-pack method of canning vegetables which may be contaminated with spores of the *B. botulinus*, a number of jars of peas, beans and corn were prepared according to the directions described in the daily press (Table 2). Each jar was inoculated with an emulsion containing spores of the *B. botulinus* before it was placed in the wash boiler. The one quart jars of peas and beans were left in the boiling water for 120 minutes, and those of corn were heated for 180 minutes. The jars were sealed immediately after removal from the boiler and were inverted and placed in a dark closet.

Within three weeks it was noted that the contents of all the jars had undergone a fermentation with the formation of gas, and that some of them were leaking. When the jars were opened there was a strong odor which resembled butyric acid, and cultures of the juice from all the jars showed a mixture of *B. botulinus* and *B. subtilis*. Portions of the juice from all the jars were injected into guinea-pigs, and some of the peas were fed to a chicken. All the guinea-pigs died within twenty-hours, and the chicken developed symptoms of limber-neck and died within thirty hours. A portion of the juice from the corn was passed through a diatomaceous filter and injected into a guinea-pig, and the animal died within twenty-four hours. The symptoms of all the guinea-pigs and of the chicken were identical with those produced by the toxin of the *B. botulinus* which is formed in meat broth.

The results of this series of experiments prove that the cold-pack method of canning vegetables is not efficient if the raw material happens to be contaminated

TABLE 1.—KNOWN CASES OF BOTULISM OCCURRING IN THE UNITED STATES

Date	No. of Cases	No. Fatal	Name of Physician	Address	Source of Poisoning	Reference in Literature
1899	1	—	Lewis	Los Angeles	Tamale	South California Pract., **14**, 461
1903	7	3	Jellinek	San Francisco	Beef	Calif. State Jour. Med., **1**, 121
1907	3	3	Sheppard	Ontario, Calif.	Canned pork and beans	South Calif. Pract., **22**, 370
1910	12	11	Peck	Sawtelle, Calif.	Home-canned pears	South. Calif. Pract., **25**, 121
1911	5	5	Twining	Aspen, Colo.	Canned beans	Cited from Curfman
1912	3	2	Lartigau and Bine	San Francisco	Bottled clam broth	Personal communication
1912	2	1	Holbrook	San Jose, Calif.	Bottled clam broth	Personal communication
?	6	5	Phillips	Amador County, Calif.	Home-canned string beans	Personal communication
1913	12	1	Wilbur and Ophüls	Stanford Univ., Calif.	Home-canned string beans	Arch. Int. Med., Oct. 15, 1914, p. 589.
1913	1	1	Sperry	Hornbrook, Calif.	Unknown	Personal communication
1913	1	—	Stiles	Boston	Minced chicken	The Jour. A. M. A., Dec. 27, 1913, p. 2301.
1915	5	5	Pratt, Reid and Nichols	Fallbrook, Calif.	Home-canned apricots	Personal communication
1915	1	1	Gundrum	Sacramento, Calif.	Home-canned asparagus	Personal communication
1915	1*	1	Hyde and Barrett	Hillsboro, Ore.	Home-canned corn	Personal investigation
1915	2	2	Frost	Los Angeles	Sausage	Am. Med., N. S., **10**, 85.
1915	1	1	Frost	Los Angeles	Unknown	Am. Med., N. S., **10**, 85.
1916	1*	1	Holbrook	San Jose, Calif.	Home-canned string beans	Personal investigation
1916	1	1	Bigelow	San Francisco	Unknown	Personal investigation
1916	1	—	.....	Escondido, Calif.	Home-canned string beans	Personal investigation
1916	1	—	Lancaster	Boston	Unknown	Tr. Am. Ophth. Soc., **14**, 648
1917	7	5	Curfman	Salida, Colo.	Canned beans or spinach	Colorado Med., **14**, 35
1917	7*	4	Crise and Smart	Escondido, Calif.	Home-canned string beans	Personal investigation

* The B. botulinus was recovered from remnants of the discarded food.

2. Dickson, E. C.: Botulism, An Experimental Study: A Preliminary Report, THE JOURNAL A. M. A., Aug. 15, 1915, p. 492.

with spores of the *B. botulinus*. The fact that both *B. subtilis* and *B. botulinus* were recovered in cultures from the contents of the jars proves that a single sterilization for the time recommended in the published directions is not sufficient to cause the destruction of spores. Fortunately, the number of spore-bearing bacteria which are responsible for producing poisonous changes in food is small, but the *B. botulinus* belongs to this small group, and since it is also an obligative anaerobe, the conditions which exist in the sealed jar or can are ideal for its growth and toxin formation.

It is probable that many persons have followed the directions which have been so widely distributed, and that large quantities of vegetables and fruits have been canned at home by the cold-pack method. It is also probable that a very small percentage of the total number of cans or jars of food are contaminated with spores of the *B. botulinus;* but the fact that botulism has occurred so frequently during the past few years, especially on the Pacific Coast, makes it necessary that all susceptible foods which have been prepared by this method should be regarded with suspicion.

TABLE 2.—DIRECTIONS FOR HOME-CANNING OF VEGETABLES DESCRIBED IN THE DAILY PRESS*

	Scald or Blanch	Hot Water Bath Outfit 212 F.	Water Seal Outfit 214 F.	Steam Pressure Cooker 5-10 lbs.	Pressure Cooker 10-15 lbs.
	Minutes				
Corn on cob or cut off.....	5	180	90	60	45
Beans, lima or string	5	120	90	60	40
Peas	5	120	90	60	40

* Abstracted from a table which appeared in the daily press, reported to be a letter dispatch from the Department of Agriculture, Washington, D. C. The directions differ from those given on page 17 of Farmers' Bulletin 839, entitled "Home-Canning by the One Period Cold-Pack Method," in that the time for heating peas at 212 F. is given at 120 minutes instead of 180 minutes.

The botulinus toxin is easily destroyed by heating, and all danger of botulism will be removed from home-canned products if the food is always boiled before it is eaten or even tasted. Under no circumstances should home-canned vegetables which have been prepared by the cold-pack method be served as salad, unless they have been cooked after their removal from the container, and, until it is established what fruits are suitable for the formation of the toxin, it will be safer to reheat all fruits which have been prepared by this method, even though there may be no apparent evidence that the food has spoiled.

2294 Broderick Street.

Soap in Treatment of Wounds.—Patynski has obtained very satisfactory results from the use of soap. He has always made use of the Marseilles soap of commerce, of good quality, and standardized at 72 per cent. This he has employed in the way of lavages, irrigations, and local applications in the form of saturated compresses. For the lavages and irrigations, he utilizes a solution of 25 gm. to the liter of water, either sterilized or simply boiled. The standard strength may even be raised to 5 per cent. without any resulting inconvenience. Compresses are prepared by soaking in a 20 per cent. solution. The soap is sterilized after grating into powder, by exposure in an oven to a temperature of 120 C. for an interval of five minutes. In cases of special urgency the surface of a piece of soap is asepticized by plunging the mass into boiling water. Also, under similar circumstances, the ordinary muslin compresses can be reliably replaced by some other tissue previously boiled. These preparations have always been readily tolerated by the skin, and have not produced any signs of local irritation, even after a continuous application of four, five or six weeks. The technic is described in detail in the *Medical Press and Circular*, Aug. 15, 1917.

THE STIFF AND LAME SHOULDER*

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Proper function of the shoulder depends on the intactness of the humeroscapular joint, both clavicular joints, the subacromial bursa and other periarticular structures, and the muscular mechanism. The humeroscapular joint allows a great amount of motion, which, however, is checked to some extent by the acromion, in order to give sufficient stability and strength. Again, a great deal of motion which is checked by the acromion is compensated by the mobility of the scapula, which swings around the clavicular joint and is regulated by the complicated muscular apparatus.

The great frequency of lame and stiff shoulders is easily explained by their complicated apparatus, and by their free exposure to strain and injury. For the latter reason, it is evident that the periarticular structures, especially the subacromial bursa, are much more frequently affected than the humeroscapular joint itself, a fact which the investigations of Küster and Codman have clearly demonstrated. It is particularly through Codman's effort that we have learned to approach certain affections of the shoulder with the knife, and the chances of necropsy have, in turn, helped to give us clearer ideas about the physiology and pathology of the shoulder. In this paper I shall attempt to outline the indications for the treatment, both operative and nonoperative, in those various types of stiff and lame shoulders that come under our observation. The second part contains a description of the conservative method of treating stiff shoulders.

1. *Acute Subacromial Bursitis.*[1]—These cases are best treated with rest, preferably with the arm held in a sling or supported in the abducted position. This may be done by simply having the arm rest on a table, or, during the night, somewhat elevated and abducted on a pillow. As soon as the most acute symptoms are over, a mild application of hot air and massage will help to relieve the pain and discomfort. Then the patient may begin to use the arm, and special treatment for the recovery of the function is generally unnecessary. There are, however, a number of patients who hold their arm in a certain muscular spasm, instinctively induced by fear of painful motion. In many of these cases, the condition is easily relieved by a few gentle assistive movements in the lying position. We have frequently seen patients who had not dared to move the arm for weeks, and complained of a great deal of pain from any attempt to raise the arm or to put it on the back. In such cases, it is sometimes surprising for the patient as well as the operator to notice the relief from pain and discomfort by a few simple movements gently guided, from the lying position, or by the following simple exercise recommended by Codman: The patient leans over, forward or sideways, and lets his arm hang down perpendicularly with the muscles completely relaxed. Easy swinging motions may be added from that position. Once started in such a way, movements of the arm will be quickly restored, provided there is no serious lesion of the shoulder joint or bursa present.

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. The headings and the indications for treatment in **Types 1**, 2 and 7 are taken from Codman's classical monograph.

2. *Subacute or Chronic Adherent Subacromial Bursitis.*—These cases are very frequent. We see at least 100 every year in the medicomechanical department, and many of them represent difficult problems. In the great majority, however, correct exercise, aided by massage and application of hot air, will give good results, though the treatment often requires a long period. As there is a tendency to hyperirritation, it is advisable to begin with treatment of short duration. The technic will be discussed in detail in the second part. When the adhesions prove to be too firm to be loosened by simple manipulations, forcible breaking up under an anesthetic may become advisable, or it may be necessary to open the bursa. We approve of Codman's advice to do even the forcible manipulations under the careful guidance of the finger after the bursa is opened, as evidently less harm is done in that way. From our experience, however, it must be stated that with advanced technic of the exercise treatment those cases have become quite rare, and forcible manipulation in this type of cases is performed in our clinic but very exceptionally.

3. *Stiff and Lame Shoulders Following Injuries of the Upper Extremity.*—A large percentage of stiff and lame shoulders follows injuries to the shoulder region itself or any other part of the upper extremity. In many of these cases, stiffness could be prevented by proper consideration of functional principles during the first weeks after the injury, principles which have been outlined in detail elsewhere.[2] The stiffness in these cases is caused not so much by adhesions as by retraction of the muscles and the periarticular structures, and from the commonly used method of fixing the injured arm in the adducted and inward rotated position. The retraction is mostly seen in the inward rotator muscles and in the structures in front of the shoulder joint. These retracted tissues generally form a very serious and sometimes insurmountable obstacle to mobilization, and we have seen many cases of this type in which the patients did not regain the function of the shoulder in spite of very persistent and long continued after-treatment. In these cases all depends on the recovery of a certain degree of external rotation; if this succeeds, the other motions will usually follow.

Operative procedures will hardly help much, and forcible manipulation has not given any single good result in my experience. Moreover, it is dangerous, as we have seen a spiral fracture of the humerus, complicated with paralysis of the musculospiral nerve, in a case in which a forcible attempt at external rotation was made. As elsewhere in the body, following injuries, the scarlike, retracted tissues may become so tight that in an attempt to stretch them the atrophic bone gives way rather than the soft tissues. Any one familiar with the nature of these retractions can not doubt that quick stretching will mean more or less laceration of tissue, and hence renewed injury with all its deleterious consequences. As I have stated above, however, by persistent, frequently repeated stretching manipulations, good success can be obtained, provided the alteration of the tissues has not been too severe.

4. *Infectious Arthritis of the Humeroscapular Joint.*—Previous to the publications of Küster and Codman, cases of painful and stiff shoulders have been generally classified as "arthritis," or as the still frequently used term "omarthritis." We know now that the majority of these cases cannot be considered as arthritis in the strict sense of the word, but as periarthritis or bursitis. The differential diagnosis between the two affections cannot be made in all cases by the clinical examination of the affected part alone, but only with sufficient consideration of the history and other manifestations of the disease. Monarticular arthritis generally leads toward several definite channels in regard to the nature of the affection, such as tuberculosis, gonorrhea, septic infection, osteomyelitis, and a few of rarer occurrence. These types can be ruled out in most cases without great difficulty, though we have seen cases in which only by long observation or by opening the joint could the diagnosis be made certain.

In polyarticular arthritis, involvement of one or both shoulders should be primarily considered as true arthritis, although the bursae may be likewise affected, and in the treatment for functional recovery this bursitis may cause more difficulties than the arthritis itself, as I have repeatedly noticed. The indications for functional treatment in arthritis are similar to those outlined under headings 1 and 2, only with sufficient consideration of still greater care and gentleness. That in all these cases etiologic factors are sought for and eliminated if possible is understood, and requires no further discussion at this place.

5. *Tuberculosis of the Shoulder Joint.*—Tuberculosis of the shoulder joint may appear as the proliferative fungous type, or as the degenerative dry type, tuberculosis sicca. The former is generally easily recognized, and with the presence of an abscess or sinuses, there can be no doubt as to the diagnosis; but in the other type the difficulties may be great unless the Roentgen ray shows definite signs of destruction.

Generally, however, the atrophy of the muscles and bones is much more pronounced than in any of the other types. In case of doubt, the general and local reaction by injection of tuberculin should be tested, and no exercise recommended before the diagnosis of tuberculosis has been ruled out definitely. The treatment of tuberculosis of the shoulder joint will not be considered in this paper.

6. *Hypertrophic Osteoarthritis.*—Many cases of stiff and lame shoulders are caused by hypertrophic osteoarthritis. It must be remembered, however, that very often it is not so much the affection of the shoulder joint proper which causes most of the trouble, but the bony proliferation over the tuberosity, as several observations have undoubtedly shown. Strange to say, this point has found very little attention in the literature. The publications on "arthritis deformans of the shoulder joint" which I have read do not mention the proliferations of the tuberosity or their close relation to chronic bursitis. I advise looking for these affections in all elderly persons. Generally they cannot be felt from the outside, and even the Roentgen ray does not always give a distinct idea about their size and location. All that we can make out on the plate is the density of the structure of the tuberosity. Generally there are other signs of osteoarthritis seen on the roentgenogram, such as proliferations at the acromioclavicular joint, the lower edge of the glenoid process, and elsewhere. It lies in the nature of the mechanics of the shoulder articulation that bony proliferations nowhere so retard the function of the arm as those over the tuberosity. The

2. Bucholz, C. H.: Manual of Therapeutic Exercise and Massage, and several other publications.

shoulder capsule itself is fairly loose, and needs considerable alteration before the function of the arm is so much handicapped as to be alarming to the patient. The same is true for the acromioclavicular joint; proliferations over the tuberosity, however, represent a much greater danger for the function, because, after having reached a certain size, they will materially narrow the space between humerus and acromion. Moreover, hypertrophic osteoarthritis stamps the tissues affected to a much greater susceptibility to traumatic damage. The tuberosity, anyway one of the most frequently injured parts of the body, when inflicted with the changes of osteoarthritis, is likely to react much more violently than under normal conditions.

Of still greater importance, however, is the intimate connection of those proliferations over the tuberosity with chronic inflammation of the bursa. We may even say that the amount of pain and discomfort depends more on the consequent bursitis than on the bony proliferations, while the amount of stiffness is the result of both these factors in addition to the condition of the capsule and the other articular and periarticular structures.

Without discussing the general principles of treatment in these cases, I shall briefly state my opinions in regard to the local treatment. Any evidence of hypertrophic arthritis in a case of stiff and lame shoulder leads us on a very conservative track. We should avoid all irritative measures; applications which in other cases act soothingly may cause irritation in a hypertrophic shoulder. Therefore we give baking of shorter duration than usually, apply massage with less force, and do not use that deep friction over the bursa which is so effective in many other cases. Exercise is used chiefly in form of gentle resistive movements with careful guidance of the finger over the tuberosity.

We have operated in two cases, which are briefly outlined:

CASE 1.—A strong and healthy laborer, aged 46, who had injured his left shoulder five years before without lasting symptoms, complained of considerable pain in the same shoulder for one month which, starting after a hard day's work, prevented him from work and often kept him awake at night. At the operation the subacromial bursa was found somewhat inflamed and its walls slightly thickened, but the most conspicuous feature consisted in a number of bony proliferations along the crest of the tuberosity. In abduction and elevation the space between the humerus and acromion was markedly narrowed, and therefore some of the most prominent proliferations were removed from underneath the floor of the bursa. There was no immediate relief from the operation, but the condition improved gradually by baking and massage for several weeks.

CASE 2.—A rather feeble and sickly looking man, aged 55, who was run over by a light wagon six months previously, had since that time suffered from pain and stiffness in his shoulder which did not respond to the usual conservative treatment. He had a certain amount of hypertrophic arthritis in this and other joints, as shown by the Roentgen ray. On account of his general poor health, the subacromial bursa was opened under local anesthesia. The bursa was inflamed and slightly thickened, the walls were partially glued together about the edges, and a few soft bands were stretched from the inner to the outer wall. Marked bony proliferations were noticed along the crest of the tuberosity, and in moving the arm it was quite evident that the motion was mostly limited by the bony overgrowth. This was not removed because of the patient's condition, but the soft tissue adhesions were gently loosened and the bands excised. The patient was subjectively much relieved, though the function of the shoulder was not much improved.

7. *Chronic Nonadherent Subacromial Bursitis (Codman's Type III).*—These cases, which represent approximately 5 or 10 per cent. of all our cases of bursitis, are characterized by a more or less constant pain and soreness, which is most intense in forward elevation with inward rotation, often leading to a spasmodic contraction of the shoulder muscles to avoid painful motion. The basis of these symptoms consists of thickening of the bursae, fringes, bands or other pathologic products which obstruct the tuberosity on its way underneath the acromion. It is obvious that a simultaneous osteoarthritis may still increase these symptoms, and in most cases it may not be easy to state definitely which of the symptoms is due to one or the other. However, the roentgenogram, the amount of mobility beyond the horizontal line and osteoarthritic manifestations in other joints may allow a certain conclusion.

At any rate, in cases with a definite manifestation of osteoarthritis, a certain conservative reservation should prevail, while in the others operative repair may be suggested as the quickest and surest way to recovery, although, as Codman states, many of these cases heal in time without any treatment. Baking and massage may relieve the pain; exercise in any form is contraindicated.

The following cases seem to belong in this class:

CASE 3.—A laborer, aged 45, fell from a ladder six months previously, landing on his left shoulder and hip. Since that time he had had pain and discomfort at night and in moving the arm. The motion was almost free except in extreme inward rotation, but there was marked crepitation in abduction, and tenderness over the bursa. At the operation, two bands were found stretched between the inner and the outer walls of the bursa, which was otherwise somewhat inflamed and slightly thickened. The bands were removed and the operation was followed by a quick and perfect recovery.

CASE 4.—A farmer, aged 56, who had injured his right arm eight years before, complained that he had had pain at the right shoulder, radiating downward to the elbow at night and in moving the arm, for about four years. At the operation, five small villous tabs were found on the posterior wall of the bursa near the crest of the tuberosity. These were removed, and the operation was followed by a perfect recovery within a few weeks.

8. *Lime Salt Deposits at the Subacromial Bursa.*—More has been written of these cases than of all other types of subacromial bursitis, and still a certain dissension of opinions exists in regard to the seat and nature of these deposits and their best method of treatment. In regard to details of this discussion, I refer to the papers of Codman, Brickner, and others and shall but briefly state my own experience. I have studied only four cases of this type, in two of which I have operated. In both cases the deposits were beneath the floor of the bursa, in one, seemingly in the tendon sheath of the supraspinatus, while in the other, that part of the tendon which is nearest to the insertion was perforated like a sieve, the holes being filled with caseous deposits. Both these cases, therefore, support Brickner's statement that the lime salt deposits have their seat in the tendon of the supraspinatus or other tendons or their sheaths. In both cases the deposits have been scraped out as much as possible, but the end-results have been very unsatisfactory, in regard both to pain and to function. This experience has led me to choose a conservative treatment in two other cases in which there has been a perfect, or almost perfect, recovery.

9. *Rupture of the Supraspinatus Tendon and the Roof of the Capsule of the Shoulder Joint.*—Codman has shown that these cases are more frequent than has hitherto been believed, but we are still far from knowing definitely how frequent they are, as their diagnosis is often quite difficult. Risley goes so far as to set a time limit of three months. Careful observation, however, has enabled us to make the diagnosis in one case fairly early. Two patients entered the outpatient clinic on the same day with almost the same history, and very similar symptoms. Both reported a severe strain of the shoulder a few weeks previously, disabling the arm completely as far as elevation and abduction were concerned. Both were suspected to have a ruptured supraspinatus, and I treated them with massage and very gentle active-passive movements. In one case the symptoms cleared up within three or four days, and the patient was completely relieved within two weeks, whereas in the other, the lack of action, elevation and abduction persisted, and the pain was not much relieved. In the latter case, therefore, an operation was done which revealed rupture of the supraspinatus tendon.

REPORT OF CASES

CASE 1.—A healthy man, aged 50, injured his left shoulder three months previously. In lifting a heavy harness above his head to a rack, his foot slipped, and he felt something give way in his left shoulder. He managed to lift the harness up on the rack, but afterward could not raise his arm. His left shoulder was sensitive, and showed almost complete absence of active and passive motion. A diagnosis was not made until, after several weeks' treatment, a certain amount of passive motion was restored, but active function did not return along with the passive motion.

An operation was therefore advised; the subdeltoid bursa was opened in the usual way, and after exposure of the subacromial space, it was found that the supraspinatus tendon was torn loose from its insertion for about two thirds of its width. There was also a large hole in the capsule so that the subacromial and the shoulder joint connected through a hole the size of a quarter. The torn ends of the capsule and tendon were sewed down to the tuberosity, and the arm put up in abduction for about five weeks.

Motions of the arm were begun two weeks after the operation, and within six months the patient's shoulder was perfectly restored as to motion and strength.

CASE 2.—A healthy man, aged 60, while pulling on a truck two weeks previously, received a severe pull on the shoulder, and felt something give way. This was followed in two days by another injury to the shoulder, and the patient was forced to stop work on account of the severe pain which radiated down from the shoulder to the outside of the elbow. He said that he had had a certain limitation in motion of the right shoulder for a year, and occasionally little pain. The patient was unable to raise his arm actively, but in stooping over could abduct his arms almost to right angle without pain. There was a painful swelling over the right shoulder.

Roentgenoscopy revealed hypertrophic changes about the greater tuberosity, and at the acromioclavicular joint, and a free mass in the latter joint.

On account of these signs, the diagnosis of rupture of the supraspinatus was made, and operation advised. Operation was performed by Dr. R. B. Osgood, using the "saber-cut" incision across the acromion and through the acromioclavicular joint. The roof of the bursa was adherent to the deltoid. The capsule was seen to be ruptured, and the supraspinatus found to be torn off at its attachment to the bone. The tendon and capsule were sutured by silk and kangaroo tendon.

After-treatment was started as in Case 1, but the functional recovery was not quite as satisfactory, probably on account of the marked hypertrophic changes.

CASE 3.—A bartender, aged 53, was struck by an automobile five months previously. He was unconscious for a few moments, but thinks that the automobile struck the right shoulder directly. He went to a surgeon, who made a diagnosis of dislocation of the humerus, and replaced it under ether. A Sayre adhesive dressing was applied for five and one-half weeks without change, leaving the whole arm stiff from the shoulder to the fingers. When the patient entered the hospital, therefore, the correct diagnosis was not possible; but when, by persistent treatment with massage and exercise, the passive mobility had been improved to a certain extent, but active abduction still was impossible, the diagnosis became suggestive of a ruptured supraspinatus, and operation was advised.

The clinical picture was complicated by an unreduced dislocation of the acromioclavicular joint, the outer end of the clavicle riding almost over the acromion. The Roentgen ray revealed hypertrophic arthritis with intensive spur formation on many joints, including the acromion, with bony atrophy of the head of the humerus and the glenoid process.

The subdeltoid was opened as in Case 1. There was a very extensive laceration of the supraspinatus and capsule, making a connection between the bursa and joint almost the size of a silver dollar. By the unreduced dislocation of the clavicle, the replacement of which was not attempted, the space was markedly narrowed, and the torn tendon and capsule were markedly retracted, so that only with great difficulty could silk strands be passed through its edges. Even with full abduction, complete apposition seemed hardly possible.

After-treatment was begun in a way similar to the first case, and the patient made a good recovery, though a certain amount of stiffness persisted. Six months after the operation, however, he was able to raise the arm with considerable strength far beyond the horizontal line, and used the arm almost as before.

THE CONSERVATIVE METHOD

The technic of conservative treatment of shoulder lesions is not so easy as is frequently believed, and from our experience with more than 2,000 cases, we venture to say that, perhaps with the exception of the hand, there is no articular mechanism of the body to which more harm is done by irrational treatment. A glance at the anatomy of the subacromial bursa and its function will make this at once evident. In abduction and elevation of the arm, the tuberosity of the humerus has to glide more or less underneath the acromion, and it is the function of the bursa to make this motion possible. It acts almost like a joint, and may be justly considered a semijoint. As we can see on the opened bursa, the space between the acromion and the humerus shows considerable variation in different positions. With the arm hanging down, and the humerus inwardly rotated, the space is quite large, allowing the finger to pass between the bones. The more the arm is rotated outward, the smaller the space will become; but still a fairly good sized space exists even in full outward rotation.

With elevation of the arm, the mechanical relations of the humerus and acromion change considerably. Here, just on the contrary, the space is relatively greatest with the arm in outward rotation, while with the arm inwardly rotated and elevated the space becomes so narrow that hardly a probe can be passed between the humerus and the acromion. These are the relations under normal conditions. When the walls of the bursa and the adjoining structures are changed in thickness, the space between the bones may change considerably.

When examining a stiff shoulder for the first time, it is, offhand, difficult if not impossible to obtain a clear idea about those relations of the bones, and only by careful observation do the mechanical conditions become distinct. Another point will also be

evident, namely, that the chances of recovery of the elevation are the better the more free the rotation. Hence the prognosis is generally better when the rotation is not, or not much, restricted than when both elevation and rotation are limited. Cases in which the elevation is free and the rotation greatly restricted are rare. We see them sometimes in the after-care of cases which have been treated for some time with immobilization in full abduction when motion in the frontal or sagittal direction has been restored first.

These anatomic remarks may give a certain idea of the great variability of the subject, and may prove that each case needs individual attention and careful study. Often it is only by prolonged observation that we obtain a certain knowledge of the mechanical conditions. Admitting, therefore, the difficulty of giving routine prescriptions, I shall try to outline the method of treatment as it is carried out in our clinic. In a case in which motion is limited in all directions, the first rule is to find out how much of the restriction is due to muscular contraction, and how much to adhesion or retraction of tissues. Examination of the function of the shoulder at first in the standing and then in the lying position may give a certain idea of the amount of muscle spasm, as in the latter position, by means of more favorable leverage conditions, the deltoid and supraspinatus muscles can work with less strain to the bursa and joint, and this difference will often become more obvious after the pain-lessening application of hot air and massage. We remember patients who, at the first glance, showed a perfectly stiff and rigid shoulder, but gained motion of 40 or 50 degrees during the first treatment. The prognosis in these cases is generally good, but one must take great care to give the treatment a soothing character, and avoid all rough handling. Hot air should be applied for not more than fifteen minutes with a temperature of not more than 180 F.

The exercise should be done as slow resistive or assistive movements, and at least in the beginning not beyond the range of discomfort, that is, when rotation is 50 degrees free, the resistive exercise should not be done more than 45 degrees. When in such a case the stage of muscular restriction is passed, and that of adhesions or retraction is reached, greater force may be applied, provided lasting pain is avoided.

The treatment then will be carried out in the following way:

The shoulder is baked for fifteen minutes, followed by a gentle rub, massage applied to the muscles of the shoulder and upper arm. Then the patient is placed on a couch or table with a pillow under the head and shoulder, and a smaller pillow under the elbow, thus bringing the humerus in a horizontal position. The operator, standing on the side of the affected shoulder, grasps with one hand the patient's forearm, which is flexed in the elbow, while the other hand steadies the scapula, and at the same time one finger rests on the acromion and another on the tuberosity for an exact control of the motion. Now the operator demonstrates to the patient inward and outward rotation, and makes at first a few light active exercises. Then three or four slow resistive movements are made with complete relaxation of all muscles after each single movement. A few gentle massage manipulations follow, and such are frequently repeated especially with those muscles which show most tendency to spastic contraction. Then, in the same slow manner, abduction, elevation and combined motions are practiced with the fingers, carefully guarding the effect of these exercises on the tuberosity, and its relation to the acromion in every single step.

With progressive improvement, the range of motion and the force applied to the resistances may be increased, and quicker motions, pendulum and other apparatus, cane and pulley exercises, applied as the case may require; but we advise against a too early use of such appliances because they are likely to act irritatingly on the bursa, causing pain and muscle spasm and restriction of motion.

These represent the majority of cases of subacute or chronic bursitis, and a certain part of cases of infectious arthritis. In those cases in which adhesions and retraction of tissue are chiefly responsible for the treatment, the prognosis depends, of course, on the actual changes; but even here, by persistent resistive exercise, concentric and eccentric, good function can be restored. The fact that within the last year or two we have not had occasion to use forcible manipulation under an anesthetic may serve as proof that we have been sufficiently satisfied with our conservative method. Two patients who seemed to respond rather slowly had been manipulated in my absence, but were evidently not relieved; on the contrary; the enormous aggravation of the pain and muscular rigidity following the manipulation has furnished us renewed proof of the great superiority of the slower, conservative method which, in most cases, will prove the quickest in the end.

ABSTRACT OF DISCUSSION

DR. WALTER TRUSLOW, Brooklyn: It is rather unfortunate that the reader of the paper could not have had opportunity to develop his full classification. I was interested, however, to note that in the first part the paper failed to give us the etiologic background of some of the conditions dealt with. I want to speak strongly of the use of massage, muscle training and gymnastic work, which Dr. Bucholz so liberally uses. The oculist objects to the indiscriminate sending of patients to the optician, and rightly so; the orthopedic surgeon objects to the ignorant sending of patients to the brace-maker with instructions to make a brace for some part of the body, and rightly so. We all object to the attitude of the osteopath, the chiropractor and others, in claiming everything for gymnastics and passive motions, and rightly so; but do we do our duty in the matter? Do we train ourselves to do this work properly? As muscle training and massage are so valuable for many orthopedic conditions, should we not train ourselves to do them?

Dr. Bucholz points out that massage and passive motions for the stiff shoulder must begin slowly, carefully and progressively. The medically trained man must actively supervise this.

DR. WALTER M. BRICKNER, New York: I think that Codman's classification of subacromial bursites into acute adherent, chronic adherent and chronic nonadherent types, which Dr. Bucholz has adopted, has no basis in the pathology of this condition. I would ask both of these gentlemen whether they have ever *seen* a chronic subacromial bursitis that was not adherent. I have operated in eighteen of these cases in all stages, acute and chronic, and in every one of them the bursal walls were adherent! The mere absence or presence of adhesions is not to be hypothecated on the basis of motion or lack of motion. Nonadherent subacromial bursitis has not been demonstrated. The adhesions of the bursal walls can be shown very clearly, with the location and the extent of the lime deposits that are found, underneath the bursa, in many cases. These adhesions may be found and the symptoms may be present, whether there is a lime deposit or

not. On the other hand, a lime deposit in the supraspinatus tendon is occasionally found without any bursitis.

As Dr. Bucholz mentioned, Codman suggested a gravity test and a gravity exercise in these cases, in order to overcome the limitation of abduction, namely, having the patient bend forward with the arms dependent. I have tried this, and found that it did not work out well. I think that the automatic abduction method in bed, which I described two years ago, and which usually works rapidly and well, is much better. Instead of attempting to use the gravity of the arms, I use the gravity of the body. The moment the patient is recumbent, there is an improvement in the abductibility of the arms. I have the arm abducted on pillows as far as the patient can comfortably abduct it himself, fasten it in that position by a sling to the head of the bed, elevate the head of the bed, and let the patient alone. As the body slips down gradually in bed, the patient's arm goes up. The result is that frequently a patient who has not been able to raise his arm more than 45 degrees in six months can in one or two days abduct it completely. This accomplished, exercises follow. If this method fails, the patient needs other treatment. I have read with great pleasure the book of Dr. Bucholz on massage, especially the chapter on the treatment of shoulder derangements. I have not been convinced, however, that massage does the work. In the cases recorded in his book the recovery was slow; it took several weeks. With the automatic abduction method in bed you will often accomplish this in two or three days. It seems to me that it was not the massage in Dr. Bucholz's cases, but the gentle passive movements and the encouraged active movements that accomplished the results.

DR. WALLACE BLANCHARD, Chicago: I had the pleasure of seeing Lieut.-Col. Robert Jones make instantaneous reduction in a case of chronic subdeltoid bursitis, the patient being a colonel in the British Army and 50 years of age. He had not been able to lift his left elbow level with the axilla for ten years. Robert Jones said that relief of these cases was rapid and easy. He stood the patient with his back against a door casing; with his left hand he steadied the patient's right shoulder and proceeded with his right hand to push the patient's left elbow back until he had thrown the head of the humerus forward onto the anterior rim of the glenoid cavity. In about two seconds Jones said, "You are cured. Come again tomorrow and swing your arms." The colonel came back the next day and could swing his left arm freely in all directions. That was an instantaneous cure.

DR. MELVIN S. HENDERSON, Rochester, Minn.: I should like to emphasize what Dr. Blanchard has spoken of. I have often seen Mr. Jones treat cases in that manner, and I have myself treated them in that way. Give the patients a few whiffs of ether, until they get primary anesthesia, and then put the arm up sharply and break the adhesions. This is to be followed by active motion. I agree with Dr. Bucholz that muscle training, etc., is a good thing, but it takes much time and attention; and you can, by this method of Jones', practically cure patients within twenty-four hours.

I wish to relate the case of a man of 50 who came to the clinic six months ago and showed a stiff shoulder that he had had for six months. I suggested manipulations but he said that he could not spare the time. He was a farmer and the next week while descending the hay loft ladder his foot slipped and he fell, necessitating his weight being sustained by his injured shoulder. His arm immediately straightened out; he felt the adhesions break; and within two weeks he was absolutely well.

I think that the question of the bursa that Dr. Bucholz wrote of is very interesting. In some cases, the bursae are affected, while in some other cases the injury is about the joint and there are adhesions.

DR. E. D. OPPENHEIMER, New York: In the clinic here we have large numbers of cases of the mild type, but not of the severe form that Dr. Bucholz has spoken of; and I think that we see early cases of disability from this cause. We are not able to make the diagnosis of its being limited to the subdeltoid bursa, and I think that periarthritis of the shoulder is a more correct term, because, in all these cases, the symptoms are pain and sensitiveness over the anterior part of the shoulder, inability to make full abduction and an area of paresthesia corresponding to the distribution of the circumflex nerve. Some of these cases present concretions in the shoulder joint. I do not think that we can draw any inferences with regard to the presence of this calcareous concretion. We try to use the abduction treatment. Few of the patients are sick enough to stand the restriction of having their arms in the abduction splint.

What has been said with reference to stretching of the joint applies only to the older cases, in which the disease has passed and adhesions alone are causing the disability. I believe that the larger number of shoulder cases are instances of the mild type, and that no positive diagnosis can be made.

DR. ROLAND MEISENBACH, Buffalo: In considering our shoulder cases, I believe that we should carefully decide whether we are dealing with a real and primary traumatic shoulder, or whether we have an early diseased joint. I have found that the symptoms of an early osteo-arthritis, and also of an early tuberculous shoulder joint, may be the same as those of the traumatic; this is especially true of the traumatic bursitis class.

DR. C. HERMANN BUCHOLZ, Boston: In regard to Dr. Brickner's statement about our inability to recognize any nonadherent type, I would say that I think we can recognize nonadherent bursitis as a clinical type to some extent. I have operated on several patients without limitation of motion, and found adhesions; so I will admit that, from a pathologic point of view, we should not consider this type; but still I agree with Codman that clinical observations justify us in making such a group.

In regard to the time required for the treatment, I admit that I see, in my department, the worst cases. Patients are sent to me from other departments, frequently after not having well responded to quicker methods. The problem is quite large; for example, stiffness resulting from fractures or other injuries of the shoulder cannot, as a rule, be relieved by such quick methods as Jones and others recommend. In these cases we have to do with the actual retraction of the tissues, and these retractions are sometimes very hard.

PRESERVATION OF COMPLEMENT

A PRELIMINARY REPORT

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In making routine Wassermann tests, a considerable factor of the necessary preliminary work is the killing of at least two guinea-pigs a week for the necessary fresh complement. As all serologists know, complement kept in the ice box can be used only on two successive days, after which its activity rapidly decreases, and anticomplementary substances develop in the guinea-pig serum. A reliable method, therefore, for preserving complement, which would not interfere with the working of the Wassermann test, would be a great saving of time, expense and guinea-pigs.

Several methods have already been tried. Noguchi dried guinea-pig serum on filter paper, but this proved to be worthless. Freezing (—15 C.) is said to be effectual, but most laboratories are not equipped to produce this temperature. Extra sedimentation has been claimed to prolong complement activity. Austin[1] advocated 40 per cent. dilution of guinea-pig serum in 25 per cent. sodium chlorid solution, but this method did not survive. In my hands it was unsatisfactory and was soon dropped. (Salt in excess is inhibitory.)

1. Austin, F. D.: A New Method for Preserving Complement for Making the Wassermann or Noguchi Blood-Test, THE JOURNAL A. M. A., March 14, 1914, p. 868.

In the hope of finding some substance which would preserve complement adequately, I systematically tested a great number of substances for hemolytic and anti-complementary activity. It was found that sodium acetate, chemically pure, possessed no hemolytic power and did not interfere with the hemolytic system, even when present in excess or in crystalline form. A tentative solution of 10 per cent sodium acetate in 0.9 per cent. sodium chlorid solution was prepared and repeatedly tested for hemolytic power and anticomplementary action with negative results each time. This solution was then used as a diluent for guinea-pig serum in preparing the usual 40 per cent. dilution for complement and *parallel* tests were made with this and the regular 40 per cent. dilution in sodium chlorid solution on all complement fixation tests.

In no case has the result of the Wassermann reaction varied as between the two complement solutions (unless perhaps a tendency of the acetate complement to give clearer cut reactions), and the unit of complement of both solutions was always the same. Guinea-pig serum thus diluted to 40 per cent., with 10 per cent. sodium acetate in 0.9 per cent. sodium chlorid solution, whose unit was found to be exactly 0.1 c.c., was placed in an ordinary refrigerator and tested from time to time for loss of strength. At the end of five days the unit remained constant at 0.1 c.c.; at ten days the unit is 0.11 c.c., and there was no bacterial clouding. This slight loss in ten days is so small as to be insignificant as compared to the practicability of saving over *fresh* complement for a week or more, the procedure is so simple, and the reactions from this preserved complement so clear cut, that I believe a preliminary report should be made at this time, so that other workers may try it out and have the benefit of its use, is satisfactory to them, especially during the hot season, when complement deteriorates rapidly. Further investigation will show what strength solution is most efficient. This diluent works equally well with alcoholic extract or with cholesterin antigen. This 10 per cent. solution of sodium acetate in 0.9 per cent. sodium chlorid solution has the same hydrogen ion concentration as the blood (H_P 7.6). Collaboration is invited.

SUPPLEMENTARY

In preparing the acetate diluent it is well to sterilize the solution to prevent the growth of fungi.

Solutions stronger than 20 per cent. form a crystalline precipitate which tends to retard hemolysis. On sedimentation the supernatant fluid contains the active complement.

Strong acetate complement dilutions keep better than weak dilutions, but lose the complementary power suddenly, in two or three weeks, without germ growth.

Weak dilutions (less than 5 per cent.) work well but are spoiled in about a week by germ growth.

Acetate solutions of from 8 to 15 per cent. are best for regular use, the 10 per cent. solution from present experience being probably best.

As examples of the efficiency of this complement preservative: A guinea-pig serum taken July 19, 1917, diluted to 40 per cent. with 10 per cent acetate solution, showed a unit of 0.1 (titration included normal serums and antigen in regular test). August 21, the unit showed 0.125.

August 16, a 15 per cent. acetate complement showing a unit of 0.1 (made the same way) was placed in a west sunlit window at room temperature (74 F.). August 27, the unit was 0.15.

Experiments have been undertaken as to the value of this acetate complement dried on paper.

CONCLUSION

Complement diluted with 10 per cent. sodium acetate will keep perfectly until used up in routine work, and will work perfectly.

THE RETENTION OF DEVITALIZED TEETH WITHOUT DANGER OF FOCAL INFECTION *

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The accumulated evidence both in research work and from clinical data has established the fact that many infective lesions of vital parts of the body can be traced to focal infections at the ends of the roots of teeth. The great amount of attention that has been brought to this important subject has resulted in the usual exaggeration, not only by the laity, but by many physicians. Consequently, it is timely that it should be made very clear that all cases of endocarditis, arthritis, ulcers of the stomach, etc., are not of dental origin.

The value of the natural teeth in the maintenance of health should not be overlooked, and they should not be extracted in a wholesale manner on insufficient evidence of their being a menace to life.

It should be understood that the evidence of a roentgenogram requires corroboration, that poor roentgenograms are apt to be most common, and that a picture in which the tissues cannot be histologically studied is unreliable.

The correct reading of such a picture for the purpose of making such a diagnosis is dependent on the definition and detail of root, alveolar process and lining membranes being absolutely clear. Even then it may be necessary to obtain other pictures at varying angles, and finally only a man thoroughly familiar with the histologic appearance of these tissues is capable of a fair interpretation of the same. Even when a roentgenogram has demonstrated the presence of focal infection in the alveolus, it does not prove it to be the etiologic factor sought for. On the other hand, it may be a contributory cause together with some other focal infection.

Too little attention in this period of quick action is being given to the making of a differential diagnosis. In this respect the value of the *Streptococcus viridans* complement fixation test is worthy of serious attention. In view of the fact that more than 150 strains of this group have so far been isolated, we must bear in mind that if it has a value, a negative result is by no means conclusive that a later test with some new strain may not show a positive fixation. I am firmly convinced from corroborating clinical evidence that the test has a certain diagnostic value. When a positive result is obtained there remains the self-evident fact of the value of an autogenous vaccine from this source.

* Read before the Section on Stomatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

Whenever a diagnosis of a focal infection at the end of a root has been made we must give due consideration to the question of immunity. The transitory character of immunity must never be forgotten, just as we must remember how much we still have to learn about immunology. Consequently, it follows naturally from this, that given a focal infection in the alveolar region, it must, as a question of prophylaxis, be cured or the tooth should be extracted.

Where corroborative evidence points to this pathologic site being the cause of metastatic disturbances of a serious nature, it should prompt the cure of the infection as rapidly as possible. In such cases immediate extraction of the diseased tooth is frequently made necessary on account of the time required to eradicate such an infection and leave the tooth in a condition free from the danger of reinfection.

On the contrary, where no metastasis is discovered it leaves the dentist ample time to attempt to properly preserve such a diseased tooth.

Perhaps the greatest reason why this operation is done so imperfectly, even at the present time, by very capable men, is on account of the fact that in the majority of cases it is one of the most difficult of operations and often requires many hours of patient labor divided into different periods of time. This is due to the fact that in so many cases calcification has blocked the root canals, and it makes no difference how extensive this calcification has become, it is essential that every canal must be explored until a broach can pass through the foramen. This can only be accomplished by Roentgen-ray checking at every stage of the operation. It is most difficult to have the average operator understand that certain definite results must be attained regardless of time consumed.

I have been frequently criticized for the length of time I have taken in certain cases, but would state here that perhaps these men, many of them thoroughly conscientious, would think further if they could see some of their failures that had been rectified, failures that were due entirely to their unwillingness to take the time necessary to explore canals to their end. The great expense, necessitated by the amount of time consumed, prohibits the operation in a great many cases. Too many men are easing their conscience by doing better work than formerly, and yet not obtaining correct results. This, however, should not suffice any longer; the principles are now understood, the Roentgen ray reveals the result, and if we make any pretense to honesty we must cease allowing imperfect root canal work to remain in the mouths of people who leave the dentist deluded into thinking that the disease has been eradicated. Remember, after all has been said, that our first duty is not to ourselves, not to our colleagues, but to the community at large.

With this understanding let us consider the principles, technic and final result to be attained.

The first thing to remember is that every step and stage of our work must be done under the most thorough aseptic surroundings. The mouth should be thoroughly sprayed at the outset of every sitting. The gingival border of the root to be operated on should be painted with iodin and the rubber dam should invariably be applied.

It is not feasible here to elaborate the varying details of removing pulp tissue from roots that deviate from the normal type and that exhibit different pathologic characteristics. Let it suffice at this time to say that every particle of organic pulp tissue must be removed, however intricate and tortuous the canals may be; all bay-like recesses and divergent canals must be cleared of organic matter. Unless this can be accomplished it is useless to proceed further.

When it is desired to make a complement fixation test, the utmost care in the way of asepsis should be taken in regard to the removal of pulp tissue. No chemicals of any kind can be employed on account of the danger of destroying any existing bacteria. When the roentgenogram shows that a sterile broach can be passed through the foramen, a fine iridoplatinum wire previously heated is passed through the foramen and turned around a number of times in the periapical region. This is now withdrawn with care so that the inoculated wire should come in contact with nothing prior to passing into an agar-agar tube, or better still, in a sterile broth tube. The carefulness of our technic alone will determine the value of the culture produced.

The therapeutic agents used to remove pulp tissue are the sodium and potassium alloy and dilute sulphuric acid. No therapeutic agent should be used in the canal which will affect any pathologic condition, which might otherwise interfere with a correct diagnosis. This especially precludes the use of all preservatives such as creosote or the phenols, which will in addition prevent an ideal hermetical sealing of the canals at a later stage.

The galvanic current is now brought into use for the purpose of zinc ionization. Without going into the details of ionic therapeusis, it can safely be said that all of the infected area can be made sterile in this way. It is all dependent on the amount of ionization used. Where there is any uncertainty as to periapical sterility, it should be determined by taking a culture from this area which should show absolute sterility. This necessarily means a delay of at least ten days when, if no culture has shown, the part should be again sterilized prior to sealing the canal. So far no investigation has shown how long such an area will remain sterile. Until this has been definitely solved, it is important that the root canal sealing should immediately follow the last ionization of a given part. In multi-rooted teeth the ionization should be carried on through each separate canal which should immediately be filled before another one has been ionized.

Every step having been so far satisfactorily carried out, we reach the final and most important stage of the operation, that of the root canal filling. This material should be nonirritating, unchangeable in character, and should so homogeneously and hermetically seal the interior of the canal as to safeguard against any infection through the tubuli from the cementum. Its most important function, however, is to seal the outside of the end of the root against two important factors. The first one is to defend the slightest opening of a foramen against the invasion of bacteria. The second, and equally important factor, is to hermetically seal any exposed surface of cementum or dentin against osteoclastic invasion.

The encapsulation of the end of the root with gutta-percha accomplishes both of these purposes. No stage of the operation requires so ideal a maintenance of asepsis.

The proof that such an operation as above described will eradicate the disease, consists in the fact that this granuloma area disappears and is replaced by new alveolar structure.

Anything that interferes with the success of these steps is liable to make the operation a failure.

The most common cause of failure among the men skilful in this operation is an imperfect encapsulation, which oftentimes cannot be detected until it is discovered that the new bone has not regenerated.

It does happen that regeneration of bone proceeds for a given time, perhaps for a year, and then on account of imperfect encapsulation, a new infection has started up, showing by evidence of new rarefication; or absorption of the root starts in at some point because there has been an exposed point of cementum not sealed by gutta-percha.

On this account it is both unwise and not safe to be positive of success until the part has been under roentgenographic observation for a couple of years. Patients should be instructed to come back for these pictures at least every six months until assured that the new bone is a permanent addition.

If it is found impossible to effect the permanent regeneration of new bone in this way there still remains a final operation by means of which the root may be maintained in a healthy manner.

The amputation of the diseased end of the root and thorough curettement of the periapical region has become a well-recognized procedure, but should be a measure of last resort.

Many apicoectomies brilliantly done eventually turn out failures, because of root absorption due to the action of iconoclasts on the exposed cementum or dentin on the stump of the root.

This should be obviated by permanently insulating this dentin surface from the body tissues. This has been done in the past by an amalgam filling over the stump which entirely covers it. An easier method and one more compatible to human tissue is to dry the surface of the stump and cover it with a few coats of a chloroform solution of gutta-percha. The rapid volatilization of the chloroform produces a dehydration of the surface and the gutta-percha is left firmly glued to the end of the root.

Of course the same follow-up roentgenograms must be taken after this operation. When none of these methods produce permanent alveolar regeneration it becomes our duty to see that the tooth in question is extracted.

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ABSTRACT OF DISCUSSION

Dr. M. I. Schamberg, New York: It is evident that an immense amount of work is being done to clarify the atmosphere as far as focal infections are concerned. I fear that too little attention has been given to the areas of infection that occur in the mouth that do not show in roentgenograms; in other words, where teeth are pulpless and show no evidence of infection at the end until they are removed and the tips of the roots snipped off and cultured. The same thing applies to the cases of incipient gingivitis which have not really reached the stage of having become definite cases of pyorrhea; cases in which there is no pus discharge, but in which there is, however, a breeding space for the lodgment of organisms that are a menace to the health. The mouth is definitely the slum district of the body, and in that mouth we have all the criminal organizations that tend to invade the system, and produce the havoc that we have heard so much about. In spite of excellent work done by Dr. Rhein and his followers, I am inclined to favor only a more definite method of curing apical infections—that the vast majority of practitioners be not permitted to deal with pulpless teeth. I believe that at least 75 per cent. are failures in spite of all that we have learned, and these conditions are a great menace to the health where they are directly or indirectly responsible for the numerous secondary involvements.

Dr. T. W. Brophy, Chicago: The most essential step to be taken in the prevention of these diseases is the training of parents as to hygienic methods. When the time arrives, Dr. Atkinson used to say, that the members of the profession and the public are brought to realize the serious consequence of dental caries, and its sequelae, then we will have arrived at a time when these diseases will be less numerous. I was further impressed with the feeling that the class of infections that have been discussed constitute a class of infections and diseases that has not received the attention that its importance demands on the part of medical teachers. One of the greatest difficulties with which I have had to contend is to find that interns, who are among the best educated of the medical graduates, have never had instruction, with few exceptions, on the diseases incident to the teeth; when they come in touch with these maladies they are not qualified to make a diagnosis or to express an intelligent opinion as to the best course to pursue in the management of their patients.

Dr. Louis Goldstine, New York: I have been dealing with chronic conditions in cases that have gone a little too far for the dental man to do much good. I have examined hundreds of roentgenograms in trying to see the percentage of infections in these chronic cases relative to the cases of healthy persons, and I find that in the 200 or 300 cases that I have gone over, about 95 per cent. of the arthritis patients have two or three abscesses in their mouths, and I think we will find this in cardiacs as well. Of course in these cases little can be done by clearing up the abscesses to cure the conditions, as the arthritic conditions are beyond redemption.

Dr. Frederick B. Moorehead, Chicago: There are certain fundamental facts that we must all face in this whole question. First, the fact of focal infections as an established truth in pathology; second, the incidence of chronic mouth infections, in relation to general infections; third, we must all agree that any infection, wherever found, should be removed. These are postulates which we must accept as a working basis. Now, the question arises, how shall this be done? For the most part by the extraction of teeth.

Dr. Rhein has indicated the possibility in the hands of an expert of saving a few teeth. He failed to tell us how many times he fails to do the thing he showed us on the screen this morning. I know he has a good percentage of failures, and he removes the teeth when treatment fails. An expert giving a lot of time in saving a few teeth does not determine an average for the profession. I am perfectly willing to admit that where teeth can be handled by a man as expert as Dr. Rhein, badly infected teeth may be saved in many cases. A specialist has many advantages over the general practitioner, both in opportunity and the class of patients who come to him. Where the patient's health is not put in jeopardy, while infected teeth are being treated, and where the case is carefully checked up by the Roentgen ray, no one has any complaint to make; one may develop a highly specialized technic in root canal management if he is willing to give thought and attention to it; but how many have developed such skill? Not many! How many people are there who may be served by that type of men? What about the great population of foreigners? What about the poor? What about the people who are bedridden in our hospitals; what about people suffering from general chronic infections? Are we going to subject them to any detailed régime? Certainly not. Reduced to fundamental facts, it becomes evident, after all, that, for the most part, teeth that are badly involved in chronic infections will have to be extracted.

Dr. Arthur Zentler, New York: After what we have seen, what right have we to believe that in spite of good technic we will have no infection around the apex of these roots?

Dr. Meyer L. Rhein, New York: I am in thorough sympathy with what Dr. Moorehead has so well said in a general way, except that I think he goes a little to extremes. I think he overestimates the lack of men who are doing good root-canal work at present. I know that personally I have trained and educated over 200 men in this very district that we reside in, who are doing first class root-canal work. There is a great deal that he has said, however, that it is not thought advisable to debate on. I would especially refer to the

difference, the unwillingness of a man, after he has spent two hours, or twenty hours, on a good tooth—and that has happened many times with me—then to tell the patient that the operation is a failure and that the tooth must be removed. That is the difficult point to make the dentist understand. It is a simple thing with the surgeon, and his confrère, the physician. Dentists have been brought up to look at these things as jobs, mechanical jobs; and they are afraid to tell their patients that the operation is a failure and that in the interest of their health the tooth must be removed. That is the point I want to emphasize in regard to what Dr. Moorehead has said.

I was disappointed not to hear from Dr. Goldstine on remedial efforts by means of extraction in some of these cases. This is a criticism against the institution with which he is connected. I have discussed that question with the managers of institutions many times, and found it difficult to resort to extraction because they had no money at their disposal to supply patients afterwards with artificial teeth. I have a long history of arthritis cases of many years' standing, many of them as bad as Dr. Goldstine will find in his institution, in which the patients have been absolutely cured by the removal of every focal infection in their mouths. This is no criticism of the gentleman; I am simply making it broadly against the lack of means that these institutions have for the completion of such an effort.

DR. KURT H. THOMA, Boston: I am connected with an institution which deals with chronic infectious cases, and most of the patients suffer from chronic arthritis of long standing. Our hospital is in a position to give these patients the very best attention in all respects.

From the beginning I have practiced radical extraction of all abscessed teeth, and in order to restore the patient's masticating efficiency, which is, of course, of great importance, we have a dental intern who supplies plate and bridge work after the extractions.

The dental department of the hospital has existed for about two years and in looking back on the many cases under our observation we find that we did not get the results which we first expected. We thought we would cure a large percentage of the patients and, although we have not done this, we find improvement in many cases. The acute symptoms of pain and swelling have improved, but they have not been entirely corrected. This is due to the fact that the destruction in the joint, or other part, where the infection is located, has progressed to such an extent that anatomic restoration is impossible. However, we do look for improvement of a more physiologic nature. The purpose of correcting abscessed teeth, infected tonsils and intestinal disorders is to improve the patient's general condition and from this and improved nutrition, in which masticating efficiency plays an important part, we expect improvement of the chronic disease. We find that we are able to put the patient in a condition which, though not ideal, enables him to do some kind of work to a limited extent, thus making a self-supporter out of a man who would otherwise be a burden to the community.

DR. T. W. BROPHY, Chicago: Dr. Thoma, in removing the teeth about the ends of the roots of which you have an abscess, what do you accomplish by that?

DR. THOMA: After I remove the tooth I get rid of the infection.

DR. BROPHY: Well, the bone is affected, is it not?

DR. THOMA: Of course by removal of teeth I mean not only extraction of the tooth, but all that goes with it, the curetting of the cavity, and the treatment of the wound until it is thoroughly healed.

DR. BROPHY: Curetting of the cavity ought to be brought out.

DR. THOMA: I both extract the tooth and curet the cavity in every case.

Centralization of Medical Work.—Specialization has not tended to decentralize, but rather has been one of the most powerful incentives for centralization in medical work.—J. E. Tuckerman, M.D., *Journal of Sociologic Medicine.*

THE ROENTGEN-RAY TREATMENT OF ACNE VULGARIS

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The etiology of acne vulgaris is now firmly established. The disease is conceded to be due to the acne bacillus, although it is generally believed that the staphylococcus is responsible for the secondary suppuration. There can be no doubt that the first named organism grows much better in an oily medium, both in vivo and in vitro.

Clinically, acne occurs almost exclusively in those persons who have oily skins, and in whom there is evidence of overactive sebaceous glands. For years, it has been realized and taught that any treatment that would free the skin from this grease furnishes the best means of combating the disease. It is now well known that the Roentgen rays will cause a permanent atrophy of glandular structure; hence their use in acne is theoretically justified. From a practical standpoint, many dermatologists have reported good results from such treatments; but up to the present time, no report has appeared in the literature of the treatment of a series of cases by the single dose method. For two years I have been using this method, and the excellent clinical results seem worthy of being placed on record.

METHOD OF TREATMENT

The technic employed is that which MacKee has advised in a series of articles. An interrupterless transformer, capable of backing up a 10 inch spark gap, and a Coolidge tube have been used in all cases in this series. At first, each dose was measured with a Holzknecht radiometer, but as experience increased, it was found that with a carefully standardized technic this was unnecessary, and that one could depend on the so-called indirect method in the vast majority of cases. In all cases the attempt was made to give just under an erythema dose, since a dose less than this was not so promptly effective, and as even one erythema dose might eventually cause telangiectases. As measured by the Holzknecht radiometer, the proper dose was three units, with the pastille at skin distance. This reading was made on the full distance scale of the instrument, not on the separate and distinct half distance scale, on which the reading would have been only one-fourth so great. In terms of the indirect measurement, the technic was as follows: The focal skin distance was nine inches, a spark gap of 7¾ inches; and a milliamperemeter reading of 4 with no filtration was invariably employed. The time was forty-five seconds. With the same technic, it requires one minute and ten seconds to produce complete epilation of the scalp.

In regard to filtration, various experiments have been made, both with aluminum and with chamois filters, but at the present time, there seems to be no advantage in their use, although theoretically it should be possible to atrophy the glands with less danger of injuring the skin when they are employed.

Respecting the number of treatments and the interval between each, the standard has been to give one treatment every three weeks. However, it is a question whether or not the use of a little over a third of the dose described above given once a week would not be better, and this method is now being tried. There are

several reasons for this change. The single dose method is very close to the margin of safety, and, if the patient used an irritating preparation, an erythema might result; the second reason is that the patient can be watched more closely.

In no case has sole dependence been placed on the Roentgen rays: in all the cases the digestion has been watched, constipation corrected, and the ingestion of an excess of carbohydrates, especially chocolate, forbidden. Locally, the comedones have been thoroughly removed. No other treatment has been given, either local or general, with the exception of the free use of soap and water, and the rubbing in of a small amount of very weak sulphur ointment, when the skin became excessively dry from the roentgen therapy.

RESULTS OF TREATMENT

In the treatment of thirty-four cases, in which at least two exposures were given, the results were as follows: Twelve patients were completely cured so no difference in respect to the age of the patient, or even the duration of the disease. Twenty-four of the cases were of the ordinary papulopustular type; of these, eleven patients were cured, eleven patients were greatly improved, and two patients markedly improved. Of the seven cases of acne indurata, one patient was cured, four patients were greatly improved, and two patients but slightly helped. Of the three cases of acne exclusively of the back, two patients were greatly improved, and one patient but slightly aided. It should be stated that in all three of these cases it was impossible to get the patients to take treatments with regularity or perseverance.

NECESSITY OF CAUTION

There are several unpleasant features that may be associated with the Roentgen-ray treatment of acne. If the hair of the scalp and eyebrows is not carefully protected by lead, the treatment will cause it to fall temporarily; in those cases in which there is a marked

REVIEW OF THIRTY-FOUR CASES OF ACNE SHOWING THE RESULTS OF TREATMENT BY THE ROENTGEN RAY AS COMPARED WITH THE USUAL DERMATOLOGIC TREATMENT

Case No. and Sex*	Age	Duration	Type	Predisposing Cause	Response to Usual Treatment	No. of Exposures	Result
1.—♀	22	10 years	Papulosa	None	Slight	2	Great improvement
2.—♀	20	3 years	Papulosa	None	None	3	Great improvement
3.—♂	17	3 months	Papulosa	None	.....	4	Great improvement
4.—♀	23	3 years	Papulosa	Overwork	Fair	4	Cure
5.—♀	21	3 years	Papulosa	Constipation	Fair	3	Cure
6.—♂	36	10 years	Back.	None	Fair	3	Great improvement
7.—♂	24	3 years	Papulosa	Constipation	Fair	1	Great improvement
8.—♀	23	2 years	Papulosa	Constipation	Fair	4	Great improvement
9.—♀	22	5 years	Indurata	None	None	9	Great improvement
10.—♂	31	10 years	Papulosa	None	.....	2	Great improvement
11.—♂	20	5 years	Indurata	Constipation	None	4	Cure
12.—♂	21	3 years	Papulosa	None	Slight	3	Cure
13.—♀	22	4 years	Indurata	Overwork	Slight	7	Improvement
14.—♀	22	6 years	Papulosa	None	None	3	Cure
15.—♀	23	6 years	Papulosa	None	.....	3	Great improvement
16.—♀	26	3 years	Papulosa	None	Slight	3	Cure
17.—♀	26	3 years	Papulosa	None	.....	3	Great improvement
18.—♂	26	5 years	Papulosa	Constipation	Slight	3	Great improvement
19.—♀	28	10 years	Papulosa	Constipation	Slight	3	Cure
20.—♀	17	1 year	Papulosa	None	None	3	Cure
21.—♂	18	4 years	Indurata	Constipation	None	2	Slight improvement
22.—♂	21	5 years	Indurata	Constipation	.....	5	Marked improvement
23.—♂	20	3 years	Indurata	Constipation	Fair	2	Marked improvement
24.—♀	22	6 years	Papulosa	Constipation	Fair	4	Cure
25.—♀	22	4 years	Papulosa	None	Fair	1	Marked improvement
26.—♀	16	1 year	Papulosa	None	.....	3	Cure
27.—♂	26	5 years	Back	None	None	2	Slight improvement
28.—♀	22	4 years	Papulosa	None	None	4	Marked improvement
29.—♂	22	5 years	Papulosa	None	None	3	Cure
30.—♀	27	6 years	Papulosa	None	Fair	6	Great improvement
31.—♂	21	5 years	Indurata	None	None	5	Great improvement
32.—♀	25	8 years	Papulosa	Constipation	.....	4	Great improvement
33.—♀	25	7 years	Papulosa	None	Fair	2	Cure
34.—♀	34	4 years	Back	None	Fair	2	Great improvement

* In this column, ♂ denotes male and ♀ female.

that not a trace of the disease remained three months after the last treatment; fifteen patients were so greatly improved that they would not have more than two or three pustules in the course of a month; four patients showed marked improvement, but the disease would relapse from time to time, apparently because of indigestion or indiscretions in diet, and the remaining three patients were but slightly benefited. In two of these cases, a sufficient chance was not given to show what the Roentgen rays really would accomplish, while the other was a remarkably resistant case, in which the patient would show considerable improvement only again to relapse as soon as treatment was discontinued. The average number of exposures given in the cured and greatly improved cases was three and one third.

From the standpoint of sex, there was practically no difference in the results obtained. Both men and women responded equally well. Likewise there was

"cowlick" and a bad acne of the forehead, it is sometimes extremely difficult to secure complete protection. The eyebrows and lashes are very easy to protect, but when pustules exist in the eyebrows, they will continue to form even when the remainder of the face is well. If one uses a considerable amount of filtration and a consequent large dose of the rays, a temporary swelling of the parotid glands may occur; but, with the standard technic described in the foregoing, this has never happened. The employment of the rays will frequently cause the appearance of numerous freckles. In many patients, considerable temporary tanning results, and this may be disfiguring since the protecting lead foil will keep some parts of the face white. It is not at all unusual for a dose which is too small to cause a temporary exacerbation of both the grease and the eruption. Any size dose will not infrequently cause the appearance of a large crop of small, very superficial pustules, that greatly annoy the

patient. The most serious danger is that of permanently damaging the skin as the result of an overdose. This may take the form of atrophy with wrinkling, or of telangiectasia associated with atrophy. In one of my cases, a piece of protecting lead slipped so that one area of skin received a double dose; the result was atrophy with wrinkling over a small area. In another case of very severe indurated acne, in which the scarring was already severe and, in fact, was threatening to become appallingly disfiguring, several erythema doses were intentionally given, as smaller doses had no result. Fortunately, only several slight telangiectases resulted, and these at the depths of already existing pits.

CONCLUSIONS

The use of the Roentgen rays in acne is justified as a routine procedure by those who are absolutely certain of their Roentgen-ray technic, and by no others, since much damage can easily be done by an inexperienced operator. The proper use of the rays affords much the quickest and surest way of controlling the disease.

COINCIDENT PREGNANCY AND TABES DORSALIS.*

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Pregnancy rarely occurs in the tabetic for several reasons: (1) because tabes occurs about ten times more frequently in men than women; (2) because decrease in sexual desire and power may be an early symptom of tabes, and (3) because a majority of the cases occur between the thirtieth and fortieth years of life, when the frequency of pregnancy is waning. Classic texts on obstetrics scarcely refer to the coincidence of tabes with pregnancy and labor. Grenier de Cardenal[1] in 1902 found only fifteen cases in the literature, and Jacub[2] says that only eight cases occur in the German literature up to that date. No one has reported any series of cases, for obvious reasons.

Fruhinsholz and Remy report a case in which the diagnosis of tabes had not been made before the occurrence of labor. The woman was a quadripara, aged 36. During pregnancy she had gastric crises which were considered as due to the pregnancy. She had no eye symptoms, and in fact no symptoms of tabes that could be noted by other than a careful neurologic examination. When labor occurred she had no pain with the contractions, and when examined, it was found that dilatation was already complete. Delivery was normal and painless, while previous labors had been very painful. These facts led to a neurologic examination which resulted in the diagnosis of tabes. Fruhinsholz and Remy note that cases have been observed of false labor in tabetics in which there were crises similar to gastric crises, which affected the uterus, and caused the patient to believe she was about to undergo labor.

Camp recently reported a case of tuberculous meningitis and tabes dorsalis in a woman eight months pregnant. The woman was aged 29, and died from lobar pneumonia a week after entering the hospital. The necropsy showed chronic meningitis of brain and cord and tabetic degeneration of the posterior columns of the cord. The spinal fluid gave a positive Wassermann reaction.

Jacub[2] reports a case of an octipara, aged 36, who came to his clinic with tabes dorsalis in full evolution. She felt no pains except at the moment of the passage of the head. The after-course was normal.

Routh[3] says:

> In pregnant women affected with paraplegia from injury or disease in the dorsal region of the cord, labor may commence at the normal term of gestation and progress in an approximately normal manner without sensation of pain. Involution and lactation are also normal.

Webster[4] says:

> In cases of paralysis due to brain and spinal cord lesions, pregnancy is not usually interfered with if the woman lives. When the lesion is higher than the lower lumbar region, labor may go on satisfactorily even though the abdominal muscles may be paralyzed.

From the foregoing brief digest of a meager literature, it is apparent that such cases as the one which I have recently observed through the courtesy of Dr. Lyle McNeile in his service at the Los Angeles County Hospital are deserving of more than passing notice, and I therefore will endeavor briefly to set forth what seem to me the most important facts in connection with it. I feel that there is nothing really new about this case, except possibly the advantageous use of pituitary solution in the indolent labor which occurred. This stimulant has, to be sure, not been available many years.

REPORT OF CASE

The patient, aged 37, has one child, born, July 3, 1914, and the one born March 9, 1917. She was married, Sept. 26, 1913. Since the first child she has had two miscarriages at approximately three months each. These were spontaneous, and did not follow a fall or other traumatism. They were absolutely painless. With the first labor, the bag of waters ruptured at 3 or 4 p. m., of July 2, and the patient had no pain until 8 a. m. of July 3. Then she had a slight pain about every five minutes until 12 noon, when her physician applied forceps and used chloroform as an anesthetic. The patient says that he did not remark that she was having any unusually small amount of pain. The baby soon after birth had a rash and would not nurse well, but no treatment for the rash was instituted by the physician whose attention was called to it. The rash soon disappeared. The child has had average health to date. The patient entered the Los Angeles County Hospital, Jan. 14, 1917, because of a seven months' pregnancy, and complained of difficulty in walking for the last three months. She also complained of difficulty in descending stairs and in balancing herself while standing erect, especially in the dark. She further complained of shooting pains in the legs and thighs rather frequently for two years previous to her admission to the hospital. These were diagnosed as rheumatism by her attending physician, but were knifelike in severity and were apparently increased by sitting outdoors too long on cool evenings, and by hot baths. She also complained of slight pain in her left chest, in the subscapular region, which was accompanied by coughing and was worse on deep breathing. It was diagnosed as dry pleurisy before she entered the hospital, and largely subsided under counter-irritant treatment, and immobilization.

She first began to be bothered by her shooting pains about January, 1915. These have continued to date. In, or close to, January, 1916, when at a neighbor's, she heard her baby cry, and tried to run home, but found she could not do it. She

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* Read before the Los Angeles Obstetrical Society, April 10, 1917.

1. Grenier de Cardenal: Rapports du tabes avec la grossesse et l'accouchement, Thèse, Bordeaux, 1902-1903.
2. Jacub: Schwangerschaft und Geburt bei Tabes dorsalis, Zentralbl. f. Gynäk., 1911, **35**, 1273.
3. Routh: Am. Jour. Obst., 1897, **36**, 384.
4. Webster: Textbook of Obstetrics, Ed. 1, W. B. Saunders Co., 1903, p. 287.

could walk as usual, but her legs absolutely refused to go fast, as she expressed it. She has tried several times since, and each time has been unable to run. As early as seven or eight years ago, the patient first noticed an occasional sharp, cutting pain running down the leg. There was no gradual increase in the frequency of these occasional pains, and as they gave little inconvenience, the patient gave them no attention. In July, 1904, she also experienced sudden pain in her right eye with rather marked impairment of vision. The latter continued for about four weeks, and then disappeared. Her other history is rather unimportant, except that she admits illicit intercourse at the age of 19, with the appearance of a red macular rash on her body about four or five months later. It was distributed over the trunk, especially the back, and over the face. She was treated at that time in Vienna, Austria, by mercurial inunction, and discharged in six weeks as cured. There is no history of a sore throat at that time, and she can remember no adenopathy. Her hair has fallen out freely, more when a young girl of about 20. Since the disappearance of her rash, the patient has had unusually good health. She has had no difficulty in urination, except during the last few weeks of her pregnancy, and no difficulty on defecation, though after catharsis perhaps greater difficulty than normal in retaining feces. The diagnosis of locomotor ataxia was made on the basis of the history as cited above, and the physical findings, especially Argyll Robertson pupils, absent knee-jerks, Romberg sign, ataxic gait and positive Wassermann test both of the blood and the spinal fluid.

During the first pregnancy the patient had nausea and vomiting for three or four months, but no gastric crises. She could eat comfortably in the afternoon and evening, but not in the forenoon. In the last pregnancy she probably vomited during four months, but never had any sharp pain above her thighs.

For the pregnancy recently terminated she was unable to supply accurately the date of her last menstrual period, but thought it was May 9 or June 9, 1916, which would have made her due to deliver about February 15 or March 15. She did not know her quickening date. The date of lightening was not determined. She carried her first child nine months, probably. Physical examination led us to believe that she was due to deliver about the first week in March.

March 6, the patient was placed on the table and examined by Drs. Allen and Bashor. The perineum bulged slightly every few minutes. The cervix was soft, and there was approximately 1½ inches dilatation. Effacement was not complete. Sagittal suture was easily palpable, and the head was movable. The fetal heart rate was 146; the quality of the tones was good. The patient was having no pain, but was in labor. She was not disturbed, but allowed to walk.

March 7, the patient was observed to have had irregular uterine contractions all the morning, but no pain, though she said she frequently felt as if the baby were moving.

March 8, the uterine contractions were of much less force. A rectal examination showed no increase in the original amount of dilatation. The head was very movable. The fetal heart tones were of good quality, and the rate was 152. At 11:30 a. m. a medium sized Voorhees bag was inserted. At 7:30 p. m. the bag was expelled with considerable fluid. At 8 a. m., March 8, a rectal examination showed no further increase in cervical dilatation and no easily palpable uterine contractions. The fetal heart tones were 156. At 3 p. m. 5 grains of quinin were given with no painful effect following, though at 4:30 p. m. dilatation was nearly complete. An attempt was then made to hasten delivery by inserting a De Ribes bag, but it twice expelled itself immediately, that is, would not stay inside the cervix. I accept this fact, aside from palpation and its evidence, as an absolute criterion of practically complete cervical dilatation, yet up to this point there had been absolutely no pain. Five-tenths c.c. of pituitary solution was now given hypodermically at about 6 p. m. After approximately fifteen minutes, pains began, and a 7 pound boy, 24 inches in length, was born spontaneously at 7 p. m. The pains were probably two-thirds as severe as ordinary labor pains. No anesthetic was used. The placenta delivered spontaneously twenty minutes later. The subsequent pathologic report stated that it was somewhat smaller and denser than normal, but microscopic examination by Drs. Hammack and Bashor found no syphilitic lesions. Mother and child had an uneventful afebrile puerperium. Lactation was somewhat subnormal, but involution seemed normal. The baby was breast fed during the first month, though it had supplemental feeding, and gained during that time 1 pound and 11 ounces. Nursing was then discontinued by the patient because of scanty milk and for economic reasons.

The outstanding features of the case were the spontaneous onset of the indolent labor of probably seventy-two or more hours' duration, the absence of pain until the head was on the perineum, and then less than might be expected, and the promptness and efficacy of the action of pituitary solution.[5]

800 Auditorium Building.

MALIGNANT DISEASE OF THE THROAT AND SINUSES

REVIEW OF CASES TREATED BY RADIUM AND ROENTGEN RAYS*

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At the present time, no single method of treatment is adaptable to all cases of malignant disease. Of the many procedures now employed, surgery has the widest adaptation in cases in which the growth is accessible and can be completely eradicated, with the possible exception of superficial epitheliomas in certain localities. In many instances, the lesions must be attacked by a combination of several of the procedures now at our command. Radium and Roentgen rays, while by no means the only agents that may be employed in cases not suitable for operative procedures, have probably the widest field of application next to surgery. When large surfaces must be exposed, as in the treatment of mammary carcinoma with its many harbors of metastasis, and when intensive deep cross-fire radiation is essential, as in the treatment of mediastinal, abdominal or pelvic tumors, Roentgen therapy is the method of choice between the two agents. When growths originate in cavities such as the mouth, throat and ear, deep cross-firing by Roentgen rays, or possibly by radium, is an essential part of the treatment, but the possibility of adding to the dosage and to the efficiency of the treatment by direct local applications of radium has a distinct advantage.

I have selected as a basis for this report a group of cases peculiarly adapted to combined radium and Roentgen treatment or to radium therapy alone. In each instance the direct application of radium to the

5. In addition to the references already given, the following will be found of interest:
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Penkert: Tabes dorsalis im Geschlechtsleben der Frau, Monatsschr. f. Geburtsh. u. Gynäk., 1909, **29**, 141.
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Mirabeau: Schwangerschaft und Geburt bei vorgeschrittener Tabes, Zentralbl. f. Gynäk., 1902, No. 5, p. 125.

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

primary growth was indicated, although not always followed, and cross-fire radiation by radium or Roentgen rays was employed for the effect on metastases or the primary lesion, or both. Operation was either undesirable, or a complete extirpation of the growth was impossible. In the selection of the two agents employed, we now believe that when cross-firing is desirable or is possible only over a comparatively small and superficial area, rather large amounts of radium with heavy filtration can be used to better advantage than Roentgen rays. When the area is larger and the lesion deeper, Roentgen rays are indicated as the agent of choice.

The outcome in the cases in this group was not successful in every instance, but the failures, of which there were more than are here reported, were of great assistance in the development of a more effectual technic which proved more efficacious in other cases. The clinical diagnosis was, in some instances, not confirmed by a pathologic examination of tissue, as the removal of a section was not always possible or desirable, but the nature of the condition was beyond question to all the consultants concerned.

REPORT OF CASES

CASE 1.—*Sarcoma of the right tonsil with metastasis to cervical lymphatics.*—A man, aged 47, referred by Drs. J. A. Babbitt and J. B. Deaver, had a marked enlargement of the lower part of the tonsil extending into the root of the tongue, with lymphatic enlargement under the ear the size of a small fist. The pathologic diagnosis was that of round-cell sarcoma. The growth was first noticed about six weeks before presentation. Treatment: Radium element, 110 mg., distance filtration, thirty-nine areas one and one-half hours each over face and neck, followed in a few days by 90 mg. in two platinum tubes buried in the growth at two points for twenty-five hours. This was not followed by sloughing. There was an immediate effect on the external growth, and the tonsil became about one-half the original size. At the end of two weeks a 50 mg. tube was buried in the tonsillar mass for twenty-four hours. Later experience with other cases proved that this should have been done at once. By the thirty-ninth day the reaction had subsided and external cross-firing, followed by burying a tube in the tonsillar mass was repeated, but with diminished dosage. At the end of fourteen weeks the tonsillar growth had disappeared and only a small mass the size of a walnut remained back of the angle of the jaw. This was excised by Dr. Deaver, and a 50 mg. tube of radium inserted for twenty-four hours. About two weeks later a very rapid metastasis appeared in the front and base of the neck. Under combined radium and Roentgen applications this disappeared within twenty-four hours. The patient was also exhibiting signs of cerebral metastasis and died two weeks later. There was no recurrence in the neck or tonsil.

Comment.—Later experience demonstrated that: 1. This growth was too long in its disappearance and too much time was allowed for metastasis. 2. The growth should have been attacked more vigorously at the start when it was found not to subside more rapidly. (A tube of radium might have been inserted in the tonsillar mass at once. Only those cases responding promptly are likely to be cured.) 3. When there is decided cervical gland involvement in such cases, more distant metastases are likely to be present and treatment should be directed toward them.

CASE 2.—*Sarcoma of the left tonsil with metastasis to cervical lymphatics.*—In a patient referred by Dr. B. A. Randall, examination revealed a large sloughing mass involving the left tonsil and soft palate and almost closing the fauces, with lymphatic enlargement under the ear. This seemed a hopeless case. The patient was in a very weak condition and hardly able to swallow or speak. The Wassermann test proved negative, and there was no response to treatment with mercury and iodid. Treatment: Radium element, 90 mg., aluminum filter, 2 mm., was applied to twenty-nine areas both sides of neck, seventy-five minutes each. Immediate improvement was noticed, swallowing was easier and the patient could talk. Dr. Randall feared to adopt my suggestion to bury some radium in the tonsillar mass lest the sloughing already present should be increased. Later experience showed that this would probably not have occurred. In three weeks the tonsillar mass was about one-third smaller and the external glandular mass had nearly disappeared. Although a second series of external applications was made a week later the patient died soon afterward.

Comment.—This case is cited as an example of the effect of cross-fire radium radiation and its value as a part of the technic. Although this case was probably hopeless from the start, a more decided influence on the primary growth could no doubt have been obtained by direct applications in addition.

CASE 3.—*Carcinoma of the left tonsil.*—In a patient referred by Drs. George P. Müller and W. Estell Lee, examination revealed a large sloughing mass in the region of the left tonsil, with no apparent cervical glandular metastasis. Treatment: Radium in platinum capsule was buried twenty-four hours in the growth by Dr. Müller and repeated in three weeks, and again at the end of seven weeks. Four weeks later a short superficial application was made to the only remaining portion of the growth and again about three weeks later. A few days later there was a sudden swelling of the peritonsillar tissues and of the neck, and it was thought that extensive sloughing from too vigorous treatment was the cause. The patient died shortly after this, and necropsy disclosed no evidence of local recurrence. The unfortunate terminal phase of the case was found due to a very rapid and deep extension of the growth into the neck posteriorly.

Comment.—This case, one of our earliest ones, demonstrated the fact that too much attention was paid to the primary growth and too little to possible metastases, which must always be suspected, even though not apparent. We must also recognize the possibility of stimulation of distant parts of the growth beyond the reach of the destructive dosage. Even though this was a case of carcinoma, and not so amenable to treatment as sarcoma, it proved a valuable lesson in the perfection of our technic in connection with subsequent cases of this kind.

CASE 4.—*Sarcoma of left tonsil.*—In a patient on the service of Drs. Charles H. Frazier and George P. Müller, examination revealed a large tonsillar growth extending past the midline. There was no sloughing, but there was probably some cervical glandular metastasis which became visible later. Treatment: Radium element, 50 mg., in platinum tube was buried twenty-four hours in the tonsillar mass by Dr. Müller. This was repeated ten days later and smaller amounts were similarly applied four times during the following three months. When seen at the end of five months, all evidences of the growth had disappeared, but there was still some resistance under and behind the angle of the jaw. Cross-fire radiation was employed over this area and the side of the neck, and repeated seven weeks later as a precautionary measure. The patient is now perfectly well at the end of two years, and during this time has been a useful citizen engaged in the making of heavy guns.

Comment.—This was also one of our early cases, and had the growth been carcinoma instead of sarcoma we probably should not have succeeded. Comparing this with the cases that follow, it will be seen that implantation alone is insufficient for a rapid cure, which is far more safe than the slow reduction of a growth over a period of several weeks or months.

CASE 5.—*Sarcoma of the left tonsil with metastasis to cervical lymphatics.*—A man, aged 74, referred by Drs. R. E. Buckley and John B. Deaver, had a large growth in the left tonsillar region extending to the midline, with no sloughing. There was very evident glandular enlargement in the neck under the ear. Treatment: Radium element, 110 mg., aluminum filter, 2 mm., was used in cross-firing from both sides of the face and neck and a tube of 35 mg. in a platinum capsule was implanted eighteen hours in the tonsillar growth. The patient was sent home and returned for inspection in sixteen days. No evidence of the growth remained. A second series

of cross-fire applications was administered at the end of three weeks and a third at the end of fifteen weeks, although there was no recurrence. A fourth series will be given later.

CASE 6.—*Postpharyngeal lymphosarcoma with metastasis to cervical lymphatics.*—A man, aged 56, referred by Drs. Howard Whittaker and Francis R. Packard, had a large mass completely occluding the fauces and apparently springing from the pharynx back of and above the left tonsil. It bulged into the mouth, but more into the posterior nares, and pushed the soft palate downward. The eustachian tubes were obstructed, breathing was difficult, and only liquids could be swallowed. Punctures by another physician showed no suppuration. In addition, there was a large glandular swelling below and back of the angle of the jaw about the size of an egg. The Wassermann test was negative. The patient had lost 40 pounds in four weeks. Treatment consisted of external application over the *left* side of face and neck by 110 mg. of radium element, 2 mm. aluminum filter, thirty-five areas, one hour each; 35 mg. radium in platinum tube was implanted eighteen hours in growth in throat, and cross-firing by Roentgen rays was applied through the *right* side of the face and neck and the thorax. In less than two weeks all evidences of the growth had disappeared. The external radium and Roentgen applications were repeated a month later, and a third series was administered in another month. At present, three and one-half months after the first treatment, the patient is apparently entirely well and has gained 41 pounds. Another series of applications will be given later.

Comment.—This patient received as vigorous treatment as it is possible to administer. There was no sloughing in the throat, and the skin reactions, while quite marked, were well within the bounds of safety.

CASE 7.—*Sarcoma of left turbinates and antrum.*—A woman, aged 51, on the service of Dr. Charles H. Frazier, University Hospital, had large turbinates blocking the left side of the nose, with granular surface and not shrinking under cocain or epinephrin. Roentgenogram showed dense clouding of the left antrum. The pathologic report on section removed was sarcoma. Treatment: Radium element, 75 mg., in two platinum tubes was placed twenty-four hours above and below the lower turbinate. About two months later, 25 mg. were again inserted in two areas twenty-four hours each. The antrum was now open. A month later the antrum still contained sarcomatous tissue, and there were some metastatic enlargements in the neck. Applications were made over these glands, over the antrum and in the antrum, for the last time. Later another series over the cervical enlargements failed to affect them materially, and a block dissection was performed nearly eight months after the first admission. Subsequently a postoperative series of applications was made. The patient was last seen, April 1, 1917, twenty months after beginning treatment, and there has been no recurrence.

Comment.—Experience with this and similar cases has shown that implantation alone is not always sufficient to control such a growth that is not very definitely localized. It is a wise precaution to employ radium or Roentgen-rays over the neck even when the primary growth is in such a locality as in this case.

CASE 8.—*Carcinoma of the left auditory canal, with metastasis to cervical lymphatics.*—A woman, aged 54, referred by Dr. B. A. Randall to the service of Dr. Charles H. Frazier, had a sloughing red mass projecting from and entirely occluding the external auditory canal. Under the ear there was a metastatic cervical enlargement the size of a walnut. The pathologic report was carcinoma. Treatment: Radium element, 25 mg., in a platinum tube was inserted twenty-five hours into the mass in the auditory canal. The cervical enlargement was treated by cross-fire radium radiation. In five weeks the latter had entirely disappeared, and the canal was open. The same treatment was repeated. Five weeks later, Dr. Randall reported too much granulation tissue in the canal, and a radium tube was again inserted for twenty-eight hours. There was no recurrence in the neck. When last seen, about one year after admission, the canal was clear, though there was still a little discharge, and there was no cervical enlargement.

CONCLUSIONS

1. In the treatment of inoperable malignant growths originating in cavities such as the mouth, throat and ear, radium therapy is an extremely valuable adjunct for the reason that it can usually be applied directly to the growth, which is more or less inaccessible to direct Roentgen-ray exposure. This alone is not sufficient, and the growth should also be attacked from every possible direction by cross-firing either by radium or by Roentgen rays or both. Any nearby area in which metastasis is likely to occur should also be exposed.

2. When implanted directly into sarcomatous tissue, radium usually causes little or no sloughing if the growth responds promptly.

3. It is advisable to produce as rapid subsidence of the growth as possible in order to minimize the possibility of metastasis during the period of treatment.

4. Our experience has seemed to prove that growths insufficiently treated at the periphery may be stimulated to more rapid proliferation at this portion.

5. Sarcomatous growths, especially in the tonsillar region, are more amenable to treatment than carcinomas.

6. It would be best to continue treatment for some time after the apparent complete disappearance of the growth.

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THE TRUTH ABOUT RADIOACTIVE THERAPY IN MALIGNANT GROWTHS *

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Ever since the days of the ancients the medical mind has been interested in the subject of the possible cure of cancer, and each generation has had its hopes raised on high, only to see them dashed again to earth. Of all the methods for cure that have been offered, the only one that has endured to the present day is that of radical surgical removal, recommended by Hippocrates, and adapted and perfected into its modern form by the persistence of the surgeon himself aided by the researches of a Vesalius, a Pasteur and a Lister. And yet, after centuries of effort by the most brilliant surgical minds of succeeding generations, the results are far from perfect, and even the surgeon admits that, if further improvement is to follow, it must result from work along educational lines leading to earlier access to the patient, with all that this implies diagnostically.

The surgeon has for centuries past found himself in the pleasant position of being the arbiter of the destinies of all new suggestions for cure. He has weighed and balanced them with what he could accomplish himself and has always been able justly to discard the proposed method in favor of his own. With the advent of the radioactive methods some twenty years ago (Roentgen ray, 1895, and radium, 1905), it was natural that enthusiastic advocates of these methods should claim more for them than they

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actually were able to accomplish. At least, that has been the history of all new therapeutic procedures. Once again the surgeon looked on in his properly critical attitude and decided that they would not do. "Into the discard with them." But this time his judgment was probably a little premature, although correct from his particular angle. With the exception of basal cell epitheliomas and certain growths with the morphology of sarcomas, but with a low grade of virulence, we doubt that radioactive measures per se ever cure malignant tumors, except in the most infrequent instances; and surgery is still the proper method to which we must resort.

In making this statement we have in mind patients who, treated by surgery and by Roentgen rays or radium, have relapsed after being symptomatically cured for ten, thirteen and even seventeen years, and also those occasional cases of spontaneous cures which occur in the practice of every surgeon of wide experience. The surgeon's attitude of mind is induced, no doubt, by having to pass judgment on so many worthless and widely advertised "cures"; but still we think the orthodox surgical attitude is somewhat faulty. Might it not have been better for the surgeon to say, "These things do not cure cancer, consequently it is better to operate when we can. But perhaps there is something to radioactive measures after all, and possibly they may prove to be the very thing I need to help me prevent recurrence after the main mass is removed, or to help ameliorate the condition of the poor afflicted individual with inoperable growth, for whom my surgical skill can do nothing."

Fig. 1.—Basal cell epithelioma before and after treatment by Roentgen rays.

Such an attitude has been the exception, not the rule, with the result that progress has been slow. Workers with the Roentgen ray and radium have by no means been exempt from criticism as regards the reports of their work. On the other hand, many sincere and honest workers in this field have had their results pointed at with a finger of scorn and disbelief with the result that a spirit of antagonism has developed in the very place where it should be conspicuously absent. Fortunately, in the last few years, a better spirit has prevailed. Surgeon and radiotherapist stand side by side and compare results, laboratories are being equipped with proper apparatus for experimental work, an occasional hospital equips its operating room with such apparatus, and altogether a spirit of toleration and conservatism prevails which leads us to hope that whatever of truth there is will be speedily demonstrated.

At the present time we know certain definite facts about the physiologic activities of radium and the Roentgen ray, and it may be stated here that as regards therapeutic activity they may be favorably compared. The two main effects of their physiologic action are seen in the effects on the nucleus of the cell and on the walls of the small blood vessels.

The effect on the cell nucleus is seen in preventing a consummation of the mitotic process after that process has once started. There is probably no direct effect on the resting nucleus except by very large doses. Furthermore, it is almost certain that if sufficient dosage is used to destroy the resting nucleus, it will also destroy the nuclei of cells of normal structures.

On the endothelial lining of capillaries the effect is expressed by a swelling of the lining cells that, in the case of poorly formed new vascular channels, such as are a notable feature of all rapidly growing neoplasms, may go on to complete occlusion, with the result that large numbers of tumor cells are destroyed indirectly by the action of the rays because their source of nourishment is impaired and destroyed.

We believe that all the effects of radioactivity as shown on neoplasms can be explained by these two hypotheses. Certainly it is true that the most marked effects of the rays are seen in those new growths in which such conditions obtain, that is, those which show a structure composed mainly of nuclei and rich in mitotic figures and which at the same time are growing rapidly and consequently are rich in small, poorly formed vascular channels. In addition it may be stated that the more nearly embryonal in type the cell is, the more easily it is influenced by the rays. This is merely a restatement of what has already been said when it is realized that the cells of the ovary, testicle, thymus, lymph nodes, etc., are just those which of necessity must mature early and be rapidly reproduced in order that the functions of these organs may persist. If these statements are true, it would seem a simple problem to elucidate the cause of success or failure in any given case, as well as to account for the phenomenon of failure after apparent clinical cure.

Let us consider the squamous cell epithelioma, a neoplasm which because of its structure and clinical behavior, constitutes a most unsuitable type for radiotherapy, composed as it is of relatively few cells, densely packed together, with a cell body composed mainly of keratin, with few mitotes and nourished by well formed vascular channels. We can state that we have never seen either radium or the Roentgen ray affect these growths unless the dosage was pushed to such a point that to the physiologic action of the

ray was added the action of a caustic. Compare this type with the basal celled epitheliomas, which are rich in nuclear figures, rapidly growing at the periphery and consequently poorly nourished by immature vascular channels. Here the effect is striking with no more dosage than is necessary to produce a physiologic effect.

Compare also the adenocarcinoma or medullary carcinoma of the breast with the true scirrhus type. I hardly think any one will dispute the superior primary results in the former type.

Consider the response of the papillary adenocarcinoma of the ovary, the carcinoma of teratoid origin of the testicle; in fact, any tumor composed of cells of the embryonal type.

Then consider the sarcomas. First, let us take the sarcomas of connective tissue origin, such as the spindle and round cell sarcomas of fascia and bone. Here we see this to be true also, for the more nearly the growth approaches the pure fibroma in type the less response is seen to the ray. Then compare these results to those seen in sarcoma of lymphoid type in which the above mentioned conditions obtain (predominance of nuclei, vast numbers of mitotic processes, very numerous poorly formed blood vessels). Surely the primary results are hardly comparable.

Again, why is it that it is always easier to reduce a metastasis than the primary growth itself, unless it is true that these cells, because of their recent advent in a given locality, have not had sufficient time to establish vascular relations with the stroma and consequently such vessels as do exist are apt to be rudimentary in structure and thus easily obliterated? If small metastases are treated with heavy doses and then removed, such cells as do persist in a viable condition, as shown by their subsequent reactions, are always found in close proximity to the vessels which have persisted, because their structure or size or both was such that obliteration could not be achieved.

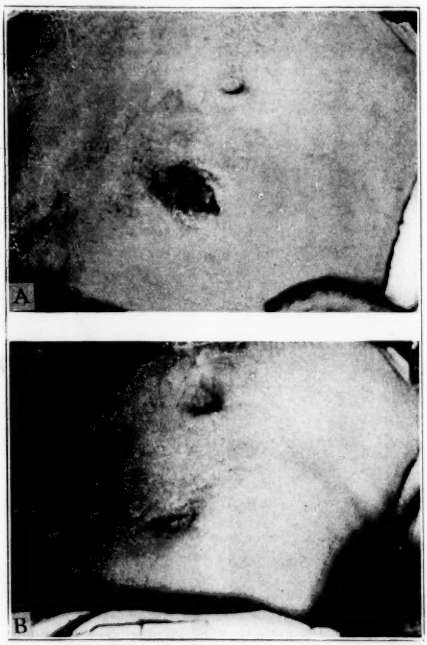

Fig. 2.—Squamous cell epithelioma of abdominal wall before and after treatment by coagulation and Roentgen rays.

Assuming that the foregoing hypotheses are true, and we believe them to be so, what conclusions may we safely draw from them and what postulates may we lay down to govern our conduct as radiotherapists? We offer the following as a summary of our beliefs regarding the application of radiotherapy in malignant growths:

1. All operable tumors, basal cell epitheliomas excepted, should be treated surgically at the earliest possible moment, but all such cases should receive the benefit of preoperative and postoperative raying with radium or the Roentgen ray or both. Furthermore, no case of operable tumor has had the benefit of all that can be done unless such procedure is followed; and the surgical statistics will materially improve if this be done.

2. All instances of inoperable tumors, of whatever nature, should be given the benefit of radiotherapy. For, while in the present state of our knowledge we cannot hold out any great promise of cure, we certainly can do more with this method to relieve these poor sufferers from pain, fetid odor, discharge, etc., than in any other way, and we can prolong life over a period varying from months to years.

3. We feel urged to suggest to hospital authorities in general, and medical boards in particular, a more enlightened attitude toward radiotherapy. Radium is expensive, we know, but the Roentgen ray, compared to the good it does, is a very inexpensive therapeutic measure.

4. We desire to urge that the many laboratories devoted to cancer research be equipped with men and apparatus in order that the many still unsolved problems of radiotherapy may be solved, as well as possible advances made in therapeutic technic.

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New Food Grains.—Looking forward to the time when increased food supplies for the population will be really necessary, investigations have been carried on in many quarters to discover products which may be available but which have not hitherto been used to any extent for human food. In the Oklahoma Agricultural College such investigations have been carried on looking to the adaptation of grains raised in that state and in the southwest which have heretofore been used almost exclusively as stock food. Among these grains are kaffir corn, millet, milo, feterita and the various sorghums, in addition to cottonseed, which has been available heretofore in the form of the oil, and which has been used to a certain extent in the culinary arts. Cottonseed meal is said to contain 51 per cent. of protein, a vastly larger percentage than meat, and when mixed with kaffir corn meal and other meals is said to make a palatable and highly nutritious bread. The other grains mentioned, by mixing, it is said may be used for bread making with success. When it is considered that the state of Oklahoma alone in one year produced 30,000,000 bushels of grain sorghums and the other grains which can be converted into flour for bread making, the importance of this addition to the wheat supply will be seen, especially when supplementing the immense crops of Indian corn always raised in this country.

THE POSSIBILITIES AND LIMITATIONS OF ROENTGEN THERAPY IN MALIGNANT DISEASE *

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Roentgen therapy has passed through many changes in its development. Generally speaking, a period of discouragement has followed one of enthusiasm, but enough truth and real value has always remained, and has been demonstrated withal, to produce today the greatest period of enthusiasm that has yet occurred. During this wave of enthusiasm that is passing over the entire country, and that previous to the war had just begun in the countries of Europe, it is well for us to stop and take account of the possibilities and limitations of the Roentgen rays in the treatment of malignant disease. A statistical review would be of little value and would be most difficult to obtain.

It would be of little value, first because since the beginning of the use of the Roentgen rays in the treatment of malignant disease, the technic has passed through a number of stages and it would be totally unfair to compare the results that were produced early in the work with those that can be produced today. Likewise, the technic and skill of individual operators have been so varied that a comparison of results would be almost worthless. Therefore, in outlining the possibilities and limitations of Roentgen therapy in malignant disease, I would have it understood that I am only expressing my own opinion based not only on a rather large personal experience, but also on the reading and observation of the very excellent work done by others both in this country and in Europe.

SUPERFICIAL EPITHELIOMAS

The possibility of curing superficial epitheliomas depends today on (1) the type of epithelioma, (2) its location, and (3) its extent.

The Type.—(*a*) Basal Cell Epithelioma: Fortunately in the larger proportion of the patients that report to us for treatment the lesions are of this type, and if they are treated early, while they are still superficial and before they have invaded the cartilage or mucous membrane, they can practically all be cured.

Pusey[1] says:

> With an experience now of hundreds of epitheliomata treated with x-rays, I can still say that I have seen practically no cases in which the epitheliomatous tissue in the skin could not be made to disappear with the x-rays.

When I make the statement that practically all can be cured I know it will sound ridiculous to men who have seen patients that were not cured under Roentgen ray treatments. I, too, have seen a considerable number that did not recover under Roentgen-ray treatment, and yet when properly treated, even though the disease had existed for a considerable time, they did get well.

While I say that practically all of these patients do get well, I do not believe that it is wise to depend on the Roentgen rays alone for the best results, because it is often tedious, time consuming, and expensive; therefore, in practically all cases at present, it is my practice to first destroy these epitheliomas completely so far as one can tell macroscopically, by means of electrocoagulation, curet the destroyed tissue away, and then follow with a full dose of deep Roentgen therapy. One or two subsequent doses of deep Roentgen therapy will usually be sufficient to bring about a permanent cure, and by this process, I believe that all patients can be cured. The electrocoagulation is a painful procedure unless either local or general anesthesia is employed. In nearly all instances one can do the work under local anesthesia. The pain will vary with the extent of the disease.

(*b*) Squamous Cell Epithelioma: It is generally recognized that squamous cell epithelioma is more difficult to cure, no matter what the method used. It is of a distinctly more malignant type. A squamous cell epithelioma develops more rapidly, recurs more frequently and persistently, and gives rise more rapidly to metastasis.

The Location.—The location of epitheliomas as influencing the possibilities of treatment by Roentgen therapy is intimately connected with the type of epitheliomas, for basal cell epitheliomas are very much more frequent in certain places and squamous cell epitheliomas more frequent in others.

In nearly all instances the epitheliomas involving the cutaneous surface of the nose, the face, the cheeks and the forehead are of the basal cell type, and the patients recover under treatment by the various methods; none of which, I believe, are quite so satisfactory as the Roentgen rays or the Roentgen-ray treatment combined with electrocoagulation.

The squamous cell epitheliomas are found most frequently on the posterior surface of the hand, mucous membrane of the lip, tongue, gums, and in fact, the mucous membrane anywhere. Those located at the inner canthus of the eye, the nasolabial fold, and about the alae, the ear or the eyelids may belong to another type. I believe that in these types a most guarded prognosis must be given. I believe that generally the Roentgen rays alone should not be depended on to cure epitheliomas in these regions.

Pusey says:[1]

> Rodent ulcer tissue yields, as a rule, more readily than squamous-cell carcinoma in the skin, but in the skin squamous-cell epitheliomata may be destroyed by Roentgen rays with definite certainty.

The combination treatment that impresses me as the best in this group of cases is that of electrocoagulation, by which the macroscopic disease is totally destroyed locally, followed by deep Roentgen therapy locally, and in the glandular area leading therefrom. If for any reason electrocoagulation cannot be applied preceding Roentgen therapy, then excision is best. If metastasis has already taken place, or if there are enlarged glands in the lymphatic area draining from the location of the lesion, these glands should always be excised by the surgeon, even if the local disease is destroyed by electrocoagulation. It is my experience in the treatment of metastatic glands associated with superficial malignant disease, that the Roentgen therapy applied over the glands tends to localize them, and under the influence of the rays they very generally break down, become necrotic and form abscesses, but the deeper portion of the posterior wall of the gland does not completely heal, and later the disease spreads. Therefore, if there are any palpable glands present I immediately, at the beginning of treatment of the

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Pusey, W. A.: Jour. Cutan. Dis., February, 1913.

patient, request a surgeon to excise them. In one patient whom I treated successfully there was an epithelioma involving the angle of the mouth, the inner side of the cheek and the surface of the alveolar process; there was present, also, a single metastatic gland, not in the neighborhood of blood vessels or nerves, and I destroyed this gland successfully by plunging the electrocoagulation needle directly into the gland and cooking it locally. This sloughed away and healed perfectly, without the involvement of any other glands and without any appreciable scar, the scar remaining smooth and almost invisible. In this case, after the electrocoagulation I, of course, applied also the Roentgen rays both locally and over the glandular area.

DEGENERATING MOLES

All moles should be removed from the skin, if practical, before there has been an opportunity for degeneration or before they have become bruised or partially removed. If an attempt is made to remove them it must be a thorough process, and if excised, they must be excised wide of the lesion. I believe that the best means for the removal of moles is by desiccation or electrocoagulation. They can be destroyed by electrocoagulation no matter how large. In my experience there has been no hemorrhage and no recurrence. If they are destroyed by electrocoagulation they should be destroyed thoroughly, and yet when they are removed for cosmetic reasons and there is no tendency to malignancy, one need not sacrifice unnecessarily the tissue round about. Generally, if they are small they can be removed without leaving an appreciable scar. A large pedunculated mole can easily be removed by the destruction of the pedunncle. The large moles, and especially the black moles occurring in older people, should be destroyed or excised and this should be followed by deep Roentgen therapy. Ordinarily a single full dose of deep Roentgen therapy immediately following the excision or destruction is sufficient. It is probably safer to follow the destruction of all moles by a dose of deep Roentgen therapy locally, for the reason that occasionally a keloid tendency develops. The moles that have already degenerated should be destroyed very thoroughly, followed by deep Roentgen therapy, repeated two or three times, according to the indications in the individual case.

Fig. 1.—Metastatic carcinoma showing complete involvement of the whole of the cervical vertebrae developing five years after amputation of the breast with no previous recurrence, all other metastases being associated with disease in two dorsal vertebrae; patient unable to support the head; head supported by a celluloid cast.

DEEP-SEATED MALIGNANT DISEASE

Carcinoma.—While in the treatment of superficial malignant disease the possibilities are very great, in the treatment of deep-seated malignant disease the limitations are correspondingly great. Deep-seated carcinoma should be further divided into (*a*) those that are operable and (*b*) those that are inoperable.

(*a*) Operable Carcinoma: In the past it has been, and at the present time still is the practice of conservative men to have the malignant disease thoroughly removed in all operable cases, and then followed by deep Roentgen therapy. This is undoubtedly the best procedure based on our knowledge today. While we have all seen patients who have apparently recovered from deep-seated malignancy under Roentgen therapy alone, the number of cases is too small to justify us at the present stage in recommending Roentgen therapy to the exclusion of operative procedures in an operable case. If operation is performed, it should be radical and complete. The Roentgen rays should not be depended on to eliminate part of the disease when the surgeon has removed only part of it. I should much rather treat a case without any operation whatever than one in which the surgeon has removed only a portion of the disease. An exception to this can be made when this operation is done purely for cosmetic purposes; that is, if a patient has a large sloughing gangrenous or necrotic carcinoma of the breast, it is sometimes best to eliminate this foul mass, not so much for the sake of the patient as for those around, because very generally this patient will not completely recover under any combination of treatments, and the patient and friends may as well have the benefit of cleanliness rather than the foulness associated with a necrotic carcinoma of the breast.

In every case of malignant disease in which operation is performed, whether by surgery or by electrocoagulation, the operation should be followed by thorough deep Roentgen therapy. This Roentgen therapy should be applied most thoroughly over the operative field and over the lymphatic areas immediately adjoining the operative field. I believe that the beneficial end-results of an operation can be doubled if thorough postoperative treatment is given. For example, it is generally admitted today by those surgeons who are most competent to speak that in cases of carcinoma of the breast in which operation is performed after the skin or glands have become involved, only about 22 per cent. of the patients recover permanently. It is my impression that this percentage of permanent recovery can be doubled with thorough postoperative Roentgen-ray treatment.

The postoperative treatment, however, should be given as soon after the operation as possible; in fact, I believe that the best time to give this treatment is before suturing the open wound, provided the equipment and the Roentgenologist can be at hand so that no time is lost. If all preparations are made in advance, this after-treatment should not require more than approximately twenty minutes of added etherization. This immediate postoperative treatment is given just before closing the wound. After the artery clamps have been removed and all bleeding points have been controlled, the skin flap is thrown back and

the whole area covered with sterile towels, and the treatment given directly through the towels. This eliminates danger of infection, and the only disadvantage is that of prolongation of the anesthetization for an additional period of approximately twenty minutes. At present such cooperation is generally not practical, though I believe it can be made so. When such immediate treatment is not practical, I believe it should be given as soon after the operation as the patient can be removed to the Roentgen treatment room. This will certainly be in less than two weeks, even though the patient must travel a distance to get the treatment. Primary treatment of deep-seated malignant disease is generally confined to the inoperable, recurrent and metastatic cases.

(*b*) Inoperable Deep-Seated Carcinoma: In this general group one can never expect brilliant results. One may see occasionally remarkable or almost miraculous results, but they are not permanently brilliant. These patients rarely get entirely well, excepting in those cases in which the inoperability was not a question of extent of the disease. Cases with malignant disease are inoperable for more than one reason. 1. They are inoperable because the disease has extended so far as to involve essential organs, or it may have infiltrated the surrounding tissues so thoroughly as to make it impracticable to eliminate all the disease. 2. They may be inoperable because of some associated constitutional disease, such as serious cardiac disease, serious pulmonary disease, diabetes or advanced arteriosclerosis. 3. They are inoperable at times because the patient absolutely refuses to be operated on. This third group is just as inoperable as any of the others, because in America today we cannot operate on a patient without the consent of either the patient or the guardian (when the patient is incompetent.) The patients who refuse operation are probably rare, but they do occur. Surgeons may dispute this fact, but surgeons and others should bear in mind that when patients consult a surgeon they have already made up their mind, at least one half, to be operated on. This was bluntly expressed some time ago by a surgeon, when a patient consulted him and refused operation. The surgeon said: "Why did you consult me if you did not want to be operated on?" I have sent patients away from my office who refused operation when I believed operation was the best procedure. One patient who thus refused operation died from the malignant disease without any other effort at treatment.

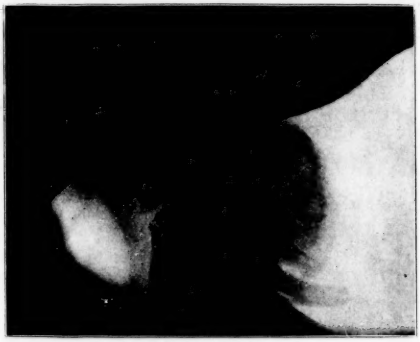

Fig. 2.—The recalcification of the dorsal vertebrae one year later, with disappearance of the patient's symptoms and with a reasonable amount of movement of the cervical vertebrae, both bending and rotation.

In the group of patients that are inoperable because of the advanced disease, the limitations of Roentgen therapy are great. The disease can often be made to disappear completely. At other times, however, it is only decreased in quantity. In carcinoma of the breast, for example, large masses of carcinomatous tissue shrink; the ulcerating areas heal; the mass becomes movable; metastatic glands, or at least palpable glands in the lymphatic areas, may be made to disappear, and the life of the patient may be prolonged in comfort for eight or ten years, but very generally these patients will ultimately die of the disease. There are exceptions to this rule, of course. Occasionally one of these patients may be treated in such a manner as to transform an inoperable case into an operable one. This has been my experience in several cases. It has also been the experience of Boggs,[2] and some others.

When the disease has shrunken to a small fibrous movable mass, and all the metastatic glands have disappeared, it is sometimes practicable for the surgeon to remove the disease locally; that is, remove the shrunken fibrous mass which remains. Very generally when this shrunken fibrous mass is examined under the microscope, the pathologist will find a small nest of malignant cells surrounded by a great deal of fibrous tissue. It is possible that such a nest of cells might lie dormant for the remainder of the patient's life, and the patient might die of some intercurrent disease, but very frequently these malignant cells in some way or other break their bounds and the disease recurs either locally or generally. I believe, therefore, that when malignant disease under treatment has shrunken to a point at which it remains at a standstill, if practicable the surgeon should remove the remaining disease. There should be a moderate amount of postoperative treatment then given because in operating the surgeon is in danger of cutting through some of these encapsulated groups of cells. If such should occur, malignant cells are liberated and may become reimplanted into the soil which is already favorable for growth.

In one such case which was at first inoperable, operation was performed by Dr. Wayne Babcock. The patient lived six years after the treatment and operation, and then died with obscure symptoms which may or may not have been due to metastatic malignant disease. There was never any local recurrence, nor any recurrence in the palpable areas following this amputation or removal of the breast.

In another case, Dr. Laplace and I consulted preceding any treatment. We both concluded that Roentgen therapy gave the best outlook, for breast and axillary glands and supraclavicular glands were involved. After the disease under treatment had shrunken to a small fibrous mass, and after the axillary and supraclavicular glands again appeared normal, Dr. Laplace at my request removed the disease locally. This patient has remained perfectly well for four years, the scar is smooth and all the tissues are freely movable. The patient developed carcinoma of the *oppo-*

2. Boggs, R. H.: New York Med. Jour., Nov. 12, 1910.

site breast subsequently and during my absence from the city consulted Dr. Laplace, who removed this right breast, doing a radical operation without any preliminary treatment and without postoperative treatment. There was a recurrence following this operation, and the patient has been under treatment over the right side during the past eighteen months; at first at intervals of a month, and later she was seen every few months. This recurrence disappeared locally, but a general metastasis developed in the bones, and treatment has been discontinued. This is a striking example of the value of Roentgen-ray treatments preceding operation in originally inoperable cases and also the value of postoperative treatment. The second operation was done and was not followed by postoperative treatment until signs of recurrence had developed. The local recurrence disappeared, but the general metastasis which had developed could not be controlled.

2. *Cases Inoperable Because of Constitutional Disease.*—In this group one of course finds all varieties and all stages of the disease. In some instances the patients appear early, in others the disease is very advanced when they report to us for examination and opinion. In the advanced group, I believe that some benefit can be obtained in practically all cases. In the early group, I believe that a considerable number can be cured. In general, the beneficial results to be obtained will vary with the extent of the disease and the degree of malignancy. The results will, of course, vary also greatly with the skill and judgment used in the treatment of the case, also very much with the amount of treatment actually given, for I find repeatedly that patients are being treated by the Roentgen rays in a supposedly efficient manner when they are in fact obtaining only a fractional portion of the amount of treatment that they should have to accomplish the results at which the physician is aiming.

3. *Patients That Absolutely Refuse Operative Procedure.*—This group is small and can be further reduced by more tact in presenting the subject of operation to the patient. In this group one likewise finds all stages of the disease. One may see very early cases in which, as a result of the cancer propaganda, patients will sometimes consult the roentgenologist or physician because of a lump in the breast. It may be so early that no one can definitely make a diagnosis either of malignancy or nonmalignancy. Many of these cases are of course only cases of abnormal involution.

In this group I believe that the majority can be made to disappear under thorough and proper Roentgen therapy. Since surgeons believe that sooner or later all this group is liable to become malignant, if the patients absolutely refuse operation, it is our duty to give them at least the benefit of the Roentgen therapy, and I believe in the great majority of instances they will recover. In making this statement I must not be misunderstood. I am not recommending Roentgen therapy in early cases of carcinoma, and it is my practice when these patients consult me at my office to send them to the surgeon for opinion and operation. I believe that if a consultation is held between the surgeon and the roentgenologist in these early cases when patients refuse operation, and in all cases of advanced disease, better results will be obtained, and fewer mistakes will occur.

In general, a closer cooperation between the surgeon and the roentgenologist will produce more satisfactory results. The inexperienced roentgenologist is more apt to rush into the treatment of early cases of tumors of the breast than the more experienced. One would think, of course, that the opposite should be true. I find frequently, as I am sure all surgeons find, that the most common mistake made in the treatment of malignant disease is the mistake of lack of early diagnosis. As a result of this lack of early diagnosis, the patients are first treated by massage, poultices, and caustics, until the disease has become so advanced that they can often make a diagnosis independent of the physician, before more expert opinion is asked.

Carcinoma should be thought of in connection with every lump in the breast. Carcinoma should be considered in every slowly healing ulcer, every ulcer that persists over a period of six weeks, especially if the mucous membrane is involved, and sarcoma should be taken into consideration in every tumor that develops outside of and very often when it involves the lymphatic glands.

Carcinomas involving the internal organs can generally not be cured by Roentgen therapy, and the treatment of this group of cases should certainly be limited to the inoperable or recurrent case. We should, therefore, urge operation in all cases of carcinoma of the internal organs if they are in an operable stage. However, if they are inoperable, some benefit can generally be obtained by Roentgen therapy. The progress of the disease can be delayed, the patient can be made more comfortable, and for a time all symptoms may be dispersed. Some brilliant results have been recorded as the result of Roentgen therapy in the treatment of carcinoma of the uterus. In only one case of carcinoma of the stomach have I seen anything that seemed brilliant.[3]

In October, 1904, I was called to a hospital in a neighboring city to see a white man, aged 64, on whom an exploratory operation had been performed three weeks previously for carcinoma of the stomach. Dr. Joseph Brice, who operated, found the lesser curvature involved by a large carcinoma. He made no attempt to remove it, and did not open the stomach. The man had complained of symptoms referable to his stomach for a year previously. He had two severe hemorrhages.

At the beginning of treatment by means of the Roentgen rays he was bedfast, and very cachectic and emaciated. The red blood corpuscles numbered 3,200,000, and hemoglobin 55 per cent. After six weeks of daily treatment he was able to walk, had gained in weight, and gained 1,000,000 in red blood corpuscles and 20 per cent. in hemoglobin. He came to the city three times a week for treatment, and at the end of six months was attending to some business. He then developed symptoms of appendicitis. Dr. Price again did an exploratory operation. He found no appendicitis and no carcinoma. He found adhesions at the site of the original operation, which he liberated. The patient died in about three weeks, and no necropsy was permitted. This case had at least the outward appearance of success.

Deep Seated Sarcoma.—Sarcoma is generally much more responsive than carcinoma to Roentgen therapy. In general, I believe the majority of sarcomas can be made to disappear under Roentgen therapy with modern technic. It is my opinion that Roentgen therapy is more satisfactory than surgery except in periosteal sarcoma, but I believe that in all instances an operation for sarcoma should be followed by thorough postoperative treatment over the wound.

3. Pfahler: Am. Jour. Med. Sc., April, 1909.

Grouping the cases of sarcoma according to their responsiveness to Roentgen therapy. I would place first the medullary sarcoma of bone, second, the sarcomas involving the soft tissues and third, the periosteal sarcomas. The last group can rarely be expected to disappear under Roentgen therapy, and since this group of sarcomas commonly affects the extremities, amputation should be advised as early as the diagnosis can be made, and in each instance the operation should be followed by thorough deep Roentgen therapy, for we all realize the likelihood of metastasis and recurrence in this group of cases.

CONCLUSIONS

1. It is possible to cure the majority of cases of superficial malignant disease by Roentgen therapy, and it is possible to cure, I believe, all cases of superficial malignant disease by a combination of electro-coagulation and Roentgen therapy if applied before metastasis has taken place deep tissues are involved.

2. Combined treatment should be used wherever the end-results will be improved, and this will apply in the majority of instances. There should be a combination of either electro-coagulation and Roentgen therapy or operation and electrotherapy.

3. In the great majority of cases when the malignant disease has extended to the glands, to the bones or to the internal organs from the breast, for example, or from the uterus, the patient cannot be permanently cured by the Roentgen rays. The patient can, however, be greatly benefited even in these advanced cases.

4. The Roentgen rays with proper technic can be expected to cure the majority of cases of sarcoma, the most responsive to the treatment being medullary bone cases, the sarcomas involving the soft tissues, and least of all the periosteal sarcomas.

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NEW GROWTHS OF THE MEDIASTINUM

WITH SPECIAL REFERENCE TO THEIR TREATMENT WITH RADIUM *

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While the sole purpose of this paper is to show through the detailed report of individual cases that radium may be used as an effectual remedy for many primary mediastinal new growths, an incurable habit of introduction seems to make indispensable a few preliminary statements dealing broadly with the clinical and pathologic aspects of the diseases under consideration.

Malignant new growths are much commoner than benign in the mediastinum. Metastatic lymphosarcoma, Hodgkin's disease, carcinoma and sarcoma are very frequent, while primary mediastinal malignancy is rare. In these secondary cases, however, the primary lesion almost invariably dominates the clinical picture, from the standpoints both of diagnosis and of treatment.

A roentgenographic examination of the chest should be made before the treatment, operative or otherwise, of any malignant growth is undertaken, particularly in cases of tumors of the thyroid, ovary, breast and testicle. The very interesting data which we have accumulated as to the effects of radium on these secondary mediastinal tumors will be considered not in this paper, but in subsequent reports dealing with the classes of neoplasms to which they belong. The primary tumors of the chest wall, of the pleura, of the esophagus and of the lungs will also be excluded from this paper, but reported in separate communications to appear later.

So far as I have been able to ascertain, there has never been a surgical cure of a malignant mediastinal tumor. A number of operations have been done to relieve acute pressure symptoms, and an excellent statement of this kind of work has been made by Friedrich.[6] Several cases of great improvement or cure through Roentgen-ray treatments are on record.

Not much detail is at hand in regard to any of these patients, and in only one was a histologic diagnosis available.

In addition to the conditions described, it should be remembered that large mediastinal masses due to tuberculosis and syphilis are occasionally observed. Martini,[12] in a series of fourteen mediastinal tumors, describes three syphilitic tumors, two tuberculous tumors, three lymphosarcomas, two sarcomas other than lymphosarcoma, one carcinoma, one hypertrophied thymus, one retrosternal thyroid, and one undiagnosed tumor.

Of the various kinds of tumors which occur in the chest, perhaps the most frequent is aortic aneurysm. In every differential diagnosis of mediastinal tumor, aortic aneurysm must be ruled out, which can usually be done from the clinical history and physical examinations.

Great reliance is placed on the fluoroscopic demonstration of expansile pulsation. It is of interest to note that in Case 5 of the series herein reported, an apparent expansile pulsation led to an incorrect diagnosis of aneurysm. Quite recently we made a positive diagnosis of solid tumor in a patient in whom no pulsation was visible, but changed our decision when the necropsy revealed an immense aneurysm, which had ruptured at one point.

SYMPTOMS

The initial subjective disturbances of mediastinal tumor are quite variable. Slight discomfort in the chest on exertion and a cough are the most common; sometimes there is hoarseness due to vocal cord paralysis, as in Case 4; occasionally difficulty in swallowing; nausea and abdominal pain, as in Case 7, or spastic paralysis of the lower extremities, as in Case 2. One quite recent case of mediastinal Hodgkin's disease was treated for months by skin specialists for pruritus before the true nature of the disease came to light.

In the later stages, dyspnea, cyanosis, dilatation of the veins of the face and the chest, and disturbance of the heart and aorta, severe pain and inanition may arise. Fluid in the pleural and pericardial cavities is quite common. The benign growths may give only mild disturbance for many years, but the malignant tumors usually advance rapidly. Death is most frequently from asphyxia.

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* Read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* On account of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the reprints, a copy of which may be obtained on application to the author.

6. Friedrich, P. L.: Beitr. z. klin. Chir., **93**, 312.
12. Martini, Piazza: Ann. d. Clin. Med., 1914, **5**, Nos. 2 and 3.

DIAGNOSIS

The recognition of a mediastinal tumor rests on: (1) ordinary physical examination of the chest; (2) roentgenographic and fluoroscopic examinations, and (3) direct examinations of the larynx, trachea and esophagus in patients in whom pressure symptoms on either the trachea or esophagus have developed.

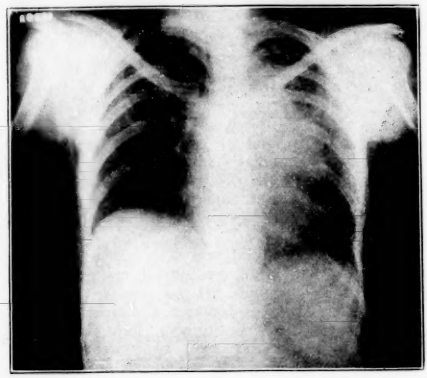


Fig. 5 (Case 3).—Large lymphosarcoma which bulged above the clavicle exteriorly, June 4, 1913.

The differentiation of the primary from the secondary tumors is made by an exhaustive general physical examination to exclude carcinoma or sarcoma elsewhere than in the chest. The general examination, plus the history and the Wassermann and tuberculin tests, may differentiate mediastinal tumor from tuberculosis, syphilis or ordinary abscess. A history of pruritus and a blood picture, such as Bunting describes as typical for Hodgkin's disease, is very suggestive of that disease. It would seem, however, that the blood picture alone can never be conclusive when the tumor is limited to the mediastinum.

If the tumor has grown up through the thorax into the neck, or lies directly against the chest wall, or has metastasized to a superficial gland, an operation and removal of tissue for histologic study is indicated, and will usually allow a positive classification of the neoplasm.

TREATMENT

In view of our experiences, I believe that as soon as a diagnosis is made, treatment with radium should be instituted promptly and, when this is not available, the Roentgen ray should be tried. In the series of eight cases reported in this paper, two patients (Cases 4 and 8) had had Roentgen-ray treatments without benefit before the radium was started.

Considerable amounts of radium (a gram or more, if possible) are necessary properly to carry out the treatments. In order to secure penetration into the depths and to avoid injury of the skin, lead filters to absorb all but the penetrating gamma rays should be used, and a fixed distance from the skin established. In none of the reported cases was the slightest irritation of the skin produced by the treatments. The exact technic employed in each case is given with the case record. As will be seen, the treatments have been variable, depending in part on the response of the patient and in part on the radium available for use.

RESULTS

After a preliminary nausea for a day or two following the treatment (this condition was present in only half of the cases), the subjective symptoms were usually greatly relieved.

1. With the exception of the first, in each of the eight cases the patients have continuously improved (Figs. 1 and 2).

2. One patient has now been under observation for three years (Fig. 3). As a result of the treatment, the paralysis is entirely relieved, and there is no evidence of the presence of the disease except as shown by the roentgenogram (Fig. 4).

3. In one patient the lymphosarcoma has been gone for four years after treatment was started (Figs. 5, 6 and 7).

4. Vocal cord paralysis has cleared up in another patient, and evidences of the mediastinal tumor have been absent for more than a year (Figs. 8 and 9).

5. In a fifth case (Figs. 10 and 11), although treatment thus far given has been insufficient, the patient is free from all subjective disturbances and the growth has become markedly reduced in size eighteen months after the treatment was instituted.

6. One year after treatment was begun, the roentgenogram in a case of mixed-cell sarcoma (Figs. 12, 13 and 14) show but little sign of the tumor, and the patient has symptomatically recovered.

7. A desperately ill patient with a granuloma, probably Hodgkin's disease, is apparently in perfect health one year after treatment was started (Figs. 15, 16 and 17).

8. Thirty months after the beginning of treatment, a patient who had a mediastinal tumor with hydrothorax is now apparently fully recovered (Figs. 18 and 19).

In addition to these eight cases, it should be stated that two patients with tumor of unknown type improved greatly, but have withdrawn from treatment; one patient with sarcoma improved greatly until a burn precluded treatment, and the tumor has since grown much worse; one small growth of unknown

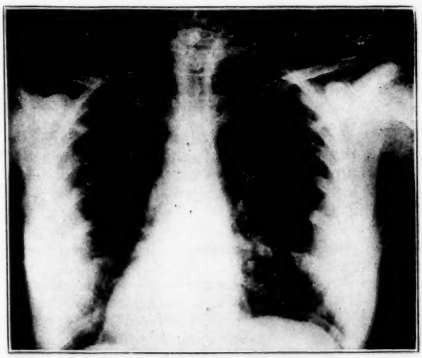


Fig. 7 (Case 3).—Tumor, April, 1917, practically cleared up under radium therapy.

character has been uninfluenced by treatment, and has remained stationary for more than a year; and one spindle-cell sarcoma of the heart was not benefited.

REPORT OF CASES

CASE 1 (872).—*Malignant mediastinal tumor, probably of thymus origin. Marked improvement of symptoms as a result of treatment. Final death of patient.*

History.—R. W., girl, aged 4, was admitted to the hospital, June 2, 1914, with a severe cough and great difficulty in respiration.

Examination.—The patient was well nourished and well developed, with good color. She was suffering with a severe cough and a tendency, on the slightest movement, to great shortness of breath and severe dyspnea. The condition was

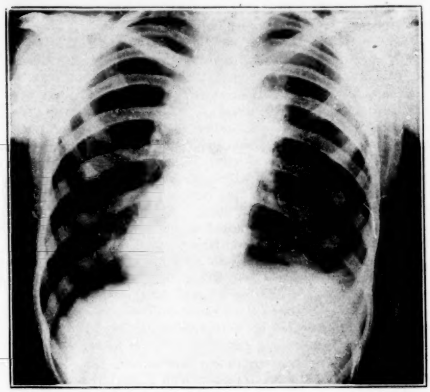


Fig. 8 (Case 4).—Extensive tumor of the mediastinum, April 27, 1916, which extends out into the lung tissue.

rapidly growing worse. A roentgenogram of the chest disclosed a definite mass behind the manubrium.

Treatment.—On the morning of June 2, 1914, 1,911 mg. of radium, screened with 3 mm. of lead and 1½ inches of gauze were applied over the sternum for one and one-quarter hours. There was no nausea or general discomfort following this treatment, and the next morning the patient was breathing comfortably. Within four or five days after the treatment, the child had apparently returned to normal health. At the time we believed that we were probably dealing with a simple hypertrophy of the thymus gland.

The patient remained comfortable and in good health until the latter part of July, when she apparently took cold. Then the cough and difficulty in breathing returned, but in a milder form. July 30, the patient received a second treatment, identical with that given June 2. Again there was a subsidence of symptoms, but the parents were instructed to bring the child in for further treatment. August 12, treatment with 1,911 mg. of radium, filtered by 3 mm. of lead and 2½ inches of gauze, was given for three and three-quarter hours on the upper chest, particularly over the front and from behind. August 18, the patient was again treated with 1,911 mg. of radium, filtered by 3 mm. of lead and 2½ inches of gauze, for four hours. Roentgenograms and other examinations at this time revealed no evidence whatever of disease.

The patient had no further respiratory trouble, but early in January she began to suffer with nausea and vomiting, and a large abdominal mass appeared. She died the latter part of January, 1915, from general weakness.

CASE 2 (1010).—*An extensive sarcoma of the posterior mediastinum, leading to paralysis of the legs and difficulty with the vesical and rectal sphincters. Entire relief of symptoms, although the roentgenogram still shows a shadow three years after the first treatment.*

History.—Miss M. V. J., aged 19, complained of pain in the back and legs, and of paralysis of the legs. She was admitted to the hospital, Feb. 13, 1914. No history of malignant tumors in the family was given, and the patient had always been healthy, with the exception of pneumonia at the age of 14, until the present trouble developed. Her present illness began in December, 1912, with a dull aching pain in the back, which was worse when she was on her feet. There was increased frequency of voiding and a numb feeling below the waist. Her gait became unsteady, and finally she was unable to move her legs or even her toes.

Examination.—She was well nourished, had excellent color and did not seem ill except for the paralysis.

Between the date of her admission to the hospital and March 25, the patient grew steadily worse as far as the paralysis was concerned. A diagnosis of chest tumor was made, and an exploratory operation was done, March 25, by Dr. J. M. T. Finney, through the left side of the back, and a large, extremely vascular tumor was found, from which a piece was removed. Unfortunately, this specimen was lost, so that a diagnosis as to the exact nature of this growth is not obtainable. Following this operation, the patient was a little better for two weeks, but she again became worse.

Treatment.—The patient was given radiation, May 21, 1914, with 1,583 mg. of radium through 3 mm. of lead and 1 inch of gauze on each of 12 areas, on the back and left chest, one hour over each area. She was very much nauseated and upset by this treatment for several days. However, the condition began to improve, and within three weeks she could move her feet and legs in bed and was beginning to be able to stand. July 27, 1914, a second treatment of twelve and one-half hours was given with 1,911 mg. of radium, screened by 3 mm. of lead and 6 inches of gauze, over the site of the tumor through the back. Dec. 20, 1914, the patient was again treated with 1,911 mg. of radium, screened by 3 mm. of lead and 4 inches of gauze, over one area in front and one area on the back of the left chest for a total of fifteen hours. During the fall of 1914, the patient's improvement continued, and she was able to walk easily and resume her duties at home. Between Dec. 20, 1914, and December, 1915, the improvement continued steadily. There was not the slightest difficulty in walking, running, dancing or any physical exercise. The reflexes were still somewhat exaggerated. The patient's

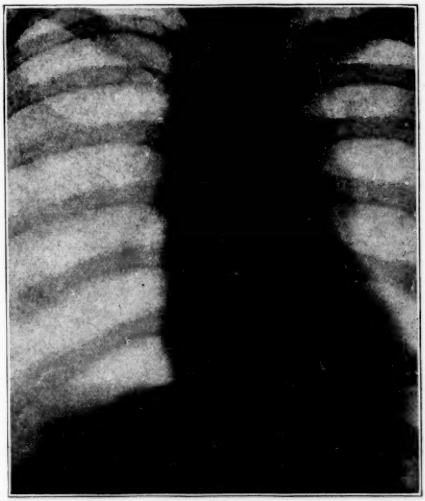


Fig. 9 (Case 4).—Marked reduction in the size of the tumor, March 15, 1917 following the application of radium at intervals for about five months.

general condition was most excellent. The roentgenogram which was taken showed a moderate decrease in the area of the shadow. There was no further treatment given until March 26, 1916, when the treatment was 2,017 mg. of radium, screened with 1½ inches of gauze and 3 mm. of lead over

nine areas on the left side of the thorax for a total of two hours. The patient reported to me in May, 1917, still having good health, and with the breath sounds much clearer in the area in the left back, the fulness being only partial, and with Roentgen-ray findings as shown in Figure 4. She is in business, in which she has been actively engaged for more than one and one-half years.

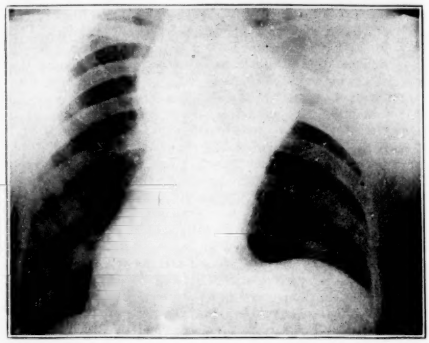


Fig. 10 (Case 5).—Huge mediastinal mass which, on fluoroscopic examination, Oct. 15, 1915, was seen to pulsate.

CASE 3 (126).—*Sarcoma of the anterior mediastinum, probably lymphosarcoma. Treated first with radium, July 9, 1913. In May, 1917, the patient was in excellent condition, and there was no evidence of growth.*

History.—Mrs. R. W. L., aged 30, was admitted to the hospital, July 9, 1913, complaining of swelling above the left clavicle, and pains in the neck and shoulders.

Examination.—The patient was medium-sized, slender and delicate looking. Special examination of the eyes, nose, throat and larynx revealed no trouble. No enlarged glands were found in the neck, axillae or groins. The heart sounds were clear. The pulse rate was 72 and equal on the two sides. There was no elevation of temperature. Immediately above the sternal end of the left clavicle could be felt a mass the size of a small hen's egg, projecting up from the mediastinum. This was hard and fixed, and was continuous with an area of dulness behind the sternum. The dulness extended 7 cm. to the right of the sternum and 5 cm. to the left. Fluoroscopic examination revealed no pulsation of the very extensive mass disclosed by the roentgenogram (Fig. 5). Under local anesthesia a small piece of tissue was removed from the mass in the neck. This proved on microscopic examination to be sarcoma. The classification was difficult, but we were inclined to believe that it was probably lymphosarcoma.

Treatment.—On July 9, 1913, the patient was radiated with 441 mg. of radium through 3 mm. of lead and 1½ inches of gauze for twenty-two hours. The day after this radiation, July 10, 1913, a treatment was given with 400 mg. of radium through 3 mm. of lead and 1½ inches of gauze over three areas for twelve hours. A few days after these treatments, all symptoms of pressure and pain had disappeared, the growth in the neck had diminished in size, and the mediastinal dulness had greatly subsided. Aug. 16, 1913, a radiation with 593 mg. of radium through 3 mm. of lead and 2 inches of gauze for thirty-two hours was carried out. Roentgenograms, Jan. 14, 1914, showed that the chest was clear. The same was true, Jan. 26, 1915. At that time, however, the patient was given a prophylactic radiation with 1,799 mg. of radium for a total of nine hours over five areas at 1 inch distance. An examination of the patient, March 15, 1916, revealed the same excellent condition in the mediastinum, there being no symptoms or disturbance of any kind.

Roentgenoscopy did not reveal any sign of tumor until the spring of 1917. Then, on the plate, a slight disturbance could be made out in the upper right mediastinum, and a small gland could be felt just above the clavicle on the right side. The patient returned, and in March, April and May had four radiations of the chest and neck. It is not certain that the gland felt above the clavicle was a return of the growth. It disappeared after the first radiation. At the present time, the patient shows a perfectly normal chest, and seems well in every way (Fig. 7).

CASE 4 (2270).—*Probable sarcoma of the mediastinum growth disappearing under radiation.*

History.—Miss N. C., aged 25, had hoarseness and discomfort in the chest with loss of weight, and was admitted to the hospital, Jan. 27, 1916.

Examination.—The patient was an extremely thin and delicate looking young woman. The eyes were slightly prominent, but showed no other abnormality. The nose, mouth and throat were negative except for a complete paralysis of the left vocal cord. The thyroid was slightly enlarged. One or two palpable glands were made out in the left cervical anterior chain, and one in the left axilla. These were just palpable and not hard. A slight diminution in respiratory movements was noted in the left side of the chest. The heart sounds were clear. There was a definite increase in the retrosternal dulness extending 7 cm. to the right of the sternum and 5 cm. to the left. This dulness rose and fell as the head was thrown back or lowered on the chest. Abdominal and pelvic examinations were entirely negative. The roentgenogram revealed an extensive tumor of the mediastinum apparently extending out into the lung tissue (Fig. 8).

Treatment.—The first treatment was given, Jan. 27, 1916, with 2,495 mg. of radium, screened with 3 mm. of lead and 4 inches of gauze, applied to one area on the back and one area on the chest for seven hours each. Following this treatment the patient was greatly nauseated and upset for four or five days, and lost from 2 to 3 pounds in weight. She then, however, began to gain weight and improved markedly in general appearance. There was also a gradual subsidence of the percussible area of dulness and marked reduction in the shadow.

March 24, 1916, the entire chest, front and back, was radiated over eight portals with 2,558 mg. of radium through

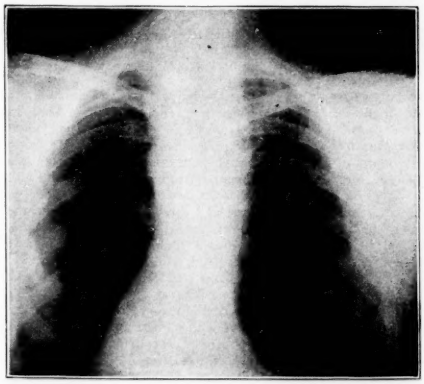


Fig. 11 (Case 5).—Slight thickening in the mediastinum, May 21, 1917; symptomatically the patient has no evidence of the disease.

3 mm. of lead and ¾ inch of gauze for two hours on each portal. The same general malaise and disturbance were noted after this radiation as after the first. The patient then began improving again in weight and appetite. The final treatment was given, May 15, 1916, with 1,969 mg. of radium screened with 3 mm. of lead and 3 inches of gauze on the front of the chest for four hours, and on the back of the chest for four hours.

The condition at the last roentgenographic examination made at the hospital in May is shown in Figure 9. The vocal cord paralysis had entirely disappeared. The patient then returned West, and is now in the Philippine Islands. She still is reported to be quite thin, but has no cough. A roentgenogram of the chest shows, if anything, a slight improvement in the condition over that of the last examination.

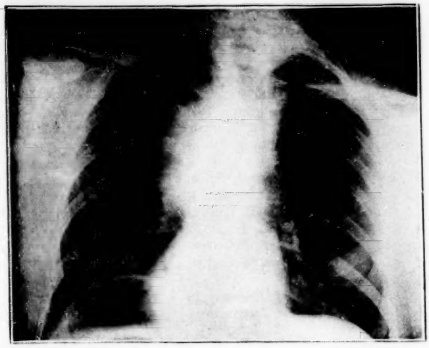


Fig. 12 (Case 6).—Immense shadow showing a large growth, May 15, 1916, in the mediastinum.

CASE 5 (1965).—*Extensive mediastinal tumor with marked respiratory distress, greatly improved by treatment.*

History.—G. J. S., man, aged 49, had a sensation of pressure in the chest with inability to breathe without great difficulty and severe cough.

Examination.—The patient was very well nourished in spite of the fact that he had lost 20 pounds in weight. His chest was broad and muscular; there was marked distention of the veins in the neck, and a bluish cast to the countenance. A frequently repeated harsh cough distressed him. He was able to sleep only in the sitting posture.

Treatment.—The first treatment was given, Oct. 11, 1915, with 1,856 mg. of radium through 3 mm. of lead and 2 inches of gauze over five areas for a total of twelve hours. Oct. 13, 1915, a second treatment of 1,744 mg. of radium was given through 3 mm. of lead and 2½ inches of gauze over six areas for two hours each, totaling twelve hours. Oct. 16, 1915, a third treatment of 1,918 mg. of radium through 2 inches of gauze and 3 mm. of lead was given on four areas on the back for one and one-half hours each, totaling five hours. Following the second treatment, there was a tremendous improvement in the patient symptomatically. His cough subsided and he was able to sleep lying flat, for the first time in some weeks. There was not the slightest nausea or discomfort following the treatment. The difficulty in swallowing entirely disappeared. Oct. 18, 1915, seven days after the treatments were instituted, there was a marked reduction in the size of the mediastinal shadow as shown on roentgenographic examination. The patient returned, Feb. 7, 1916, and received radiation with 2,465 mg. of radium through 3 mm. of lead and 4 inches of gauze on two areas, each six and one-half hours. At that time, he was feeling very well indeed. The patient has continued to feel comfortable and well, and has been working at his business. He returned to the hospital, May 21, 1917, and roentgenoscopy revealed the mass in the chest to be as shown in Figure 11. He was given, May 21, at a distance of 4 inches, a radiation for thirteen and one-half hours, with 1,115 mg. of radium. He is to return shortly for a repetition of this treatment. Except for a slight thickening in the roentgenogram (Fig. 11), and a slight increase in retrosternal dulness, the patient shows no evidence of disease. We, however, propose to carry on the treatments to a complete resolution if possible.

CASE 6 (2511).—*Huge mixed sarcoma of the mediastinum. Apparent cure.*

History.—J. H. L., man, aged 36, was admitted to the hospital, May 15, 1916, complaining of a lump in the chest.

Examination.—The patient was strong and healthy-looking. He was hoarse, but had no difficulty in respiration or in deglutition. An examination of the eyes, nose, throat, larynx and pharynx revealed nothing abnormal. Several small, soft palpable glands were felt in the right and left sides of the neck, especially over the sternal end of the clavicle. No axillary glands were palpable. The inguinal glands were small. There were no abdominal masses, and no tenderness of the abdomen. Rectal examination showed normal pelvic organs. Lying just below the sternal end of the clavicle and bulging out of the front chest wall was a projecting tumor which measured 3 inches across the base and about ½ inch high.

Treatment.—The first treatment was given, May 15, 1916, with 2,905 mg. of radium through a filter of 1 inch of gauze and 3 mm. of lead on two areas of the neck for one hour each, and two areas of the chest for three and one-fourth hours through 2 inches of gauze and 3 mm. of lead, making a total of eight and one-half hours. May 23, 1916, through 3 inches of gauze and 3 mm. of lead, one area of the chest was radiated for three and three-fourths hours. June 5, 1916, 3,049 mg. of radium were applied screened with 3 mm. of lead and 2 inches of gauze on two areas of the back, three and three-fourths hours each. July 15, 1916, 2,938 mg. of radium screened with 3 mm. of lead and 1¼ inches of gauze were applied over two areas on the neck, two areas on the chest, and on two areas on the back to each axilla and to each groin, for one hour. Sept. 18, 1916, 928 mg. of radium were applied through 3 mm. of lead and 1¼ inches of gauze to three areas on the neck for three-fourths hour each; and 3,118 mg. of radium through 3 mm. of lead and 1¼ inches of gauze were applied on two areas of the neck, each axilla and each groin for three fourths of an hour each. Nov. 18, 1916, 2,715 mg. of radium were applied through 3 mm. of lead and 4 inches gauze on one area for eleven hours.

This patient invariably had some nausea and some vomiting for a day or two after each radiation. However, from the beginning the symptoms steadily improved and have continued to improve up to the present time. The patient now

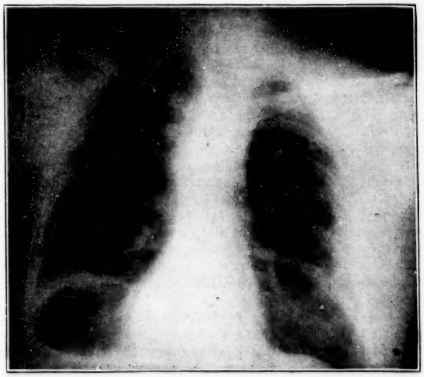


Fig. 14 (Case 6).—Marked shrinkage of the tumor, Jan. 24, 1917, following the institution of radium treatment.

has no cough, no expectoration, no visible tumor on inspection of the chest, and no palpable lymph glands. A roentgenogram of the chest obtained, May 19, 1917, is shown in Figure 14. The last treatment was given, May 10, 1917, with 1,034 mg. of radium through 3 mm. of lead and 3 inches of gauze, six hours over the front of the chest and six hours over the back of the chest.

While it is yet .oo early to be dogmatic, it seems reasonable to assume that we shall secure a permanent cure in this case.

CASE 7 (2471).—*An infection, probably Hodgkin's disease, associated with enormous enlargement of the mediastinal*

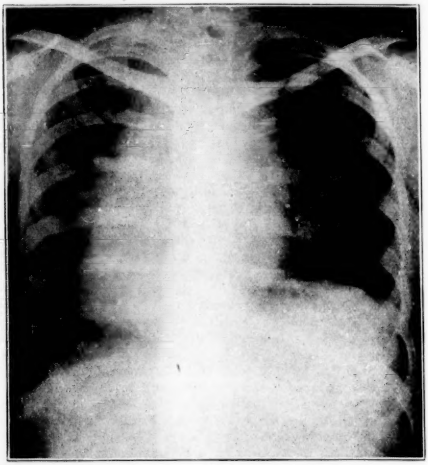


Fig. 16 (Case 7).—Very large mediastinal tumor, April 7, 1916.

glands and liver. Patient apparently well thirteen months after radium treatment was instituted.

History.—Miss R. F., aged 18, had chills, fever, cough and pain in the back and legs and was admitted to the hospital, April 6, 1916.

Microscopic Diagnosis.—A cervical lymph gland which was removed for examination showed Hodgkin's disease.

Examination.—At the time of admission to the hospital, April 6, 1916, the patient presented a picture of grave illness. She was very much emaciated and toxic; the temperature was 102 F.; the pulse rate 130. There was slight clubbing of the finger nails, the skin was lemon color. A number of enlarged lymph glands were palpated in the neck on both the right and left sides. The axillary lymph glands were also palpable; the epitrochlear glands were not enlarged; the inguinal lymph glands were just palpable. Examination of the eyes, mouth, nose and throat disclosed no abnormality. A marked pulsation of the heart and vessels in the neck was noted. The heart was normal except there was a harsh rasping first sound. The retrosternal dulness was markedly increased both to the right and to the left, and a large hard mass was palpated in the left lobe of the liver. The abdomen exhibited no other mass or abnormality. The roentgenogram of the chest obtained, April 7, 1916, showed a huge mediastinal tumor (Fig. 16).

Treatment.—Beginning April 7, 1916, 2,543 mg. of radium, screened with ¾ inch of gauze and 3 mm. of lead, was applied for three-fourths hour to each of sixteen areas over the front and back of chest. The patient was not markedly upset by the treatment, and in four or five days began to take nourishment in a way she had not taken it for several months. Ten days after this treatment, both the pulse and the temperature had returned to normal, and up to the present time, there has not been any fever or rapid pulse rate. Roentgenograms made at frequent intervals demonstrated that the tumor mass in the chest was rapidly decreasing in size, and palpation showed the return of the liver to normal size in less than three weeks. The second treatment was given, April 21, 1916, with 2,148 mg. of radium screened with 3 mm. of lead and 1 inch of gauze on six areas one hour each, totaling six hours. April 28, 1916, the third treatment was given with 2,702 mg. of radium filtered with 3 mm. of lead and 1½ inches of gauze to six areas, one hour each, totaling six hours. May 28, 1916, the patient had a treatment with 2,561 mg. of radium screened with 3 mm. of lead and 1¼ inches of gauze applied to six areas on the neck and chest and two areas on the epigastrium, one hour each, making a total of eight hours.

During a month's stay in the hospital, the patient was completely transformed physically, her color became rosy, she gained in weight, the glands disappeared from the neck and axillae, and the tumor from the chest.

This patient has been under observation from time to time since she left the hospital. At present, she shows no evidence of the growth. In February, 1916, one or two small glands appeared in the left side of the neck, but disappeared spontaneously. Blood examination in January, 1917, revealed: red blood cells, 4,670,000; white blood cells, 10,000; hemoglobin, 83 per cent.; polymorphonuclear neutrophils, 74 per cent.; polymorphonuclear eosinophils, 1 per cent.; polymorphonuclear basophils, 0; small lymphocytes, 12 per cent.; large lymphocytes, 5 per cent.; transitionals, 8 per cent.

A roentgenogram of the chest obtained, March 7, 1917, shows the condition as in Figure 17. The patient seems in robust health.

CASE 8 (1284).—*Mediastinal sarcoma, possibly Hodgkin's disease. Patient was first treated Sept. 1, 1914, and is now entirely well.*

History.—G. W. T., man, aged 45, had noticed difficulty in breathing and swallowing, and swelling of the face and hands. On admittance to the hospital, Sept. 1, 1914, no history was obtained of any member of the family having had tumor, tuberculosis or syphilis; in fact, the patient has enjoyed exceptional vigorous health.

Examination.[13]—The patient was very well nourished. He sat propped up in bed, breathing with a little difficulty, and the face and neck were slightly edematous and quite cyanotic. The right arm was somewhat swollen. The chest was covered with dilated venules and there were large dilated veins in the right neck. The eyes were normal. The nose, pharynx and mouth showed no abnormality except very bad teeth. The

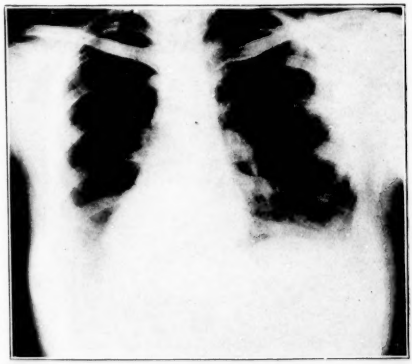


Fig. 17 (Case 7).—Roentgenogram made March 2, 1917, about one year after radium treatment was begun. Practically the entire disappearance of the tumor has occurred.

vocal cords were normal. The patient had a brassy cough. A bronchoscopic examination made by Dr. Samuel Crowe revealed the posterior wall of the trachea pushed forward

13. For the details of the physical examination, I am indebted to the records of the Johns Hopkins Hospital, the patient having been examined by many members of the medical staff, and the Roentgen-ray and laryngological staffs.

at a point 15 cm. above the bifurcation. There was no enlargement of any of the lymph glands of the neck, axillae or groins. The abdominal examination failed to disclose any abnormality. The pulse was equal at the two wrists. The heart beat was regular; there was a marked systolic murmur at the apex. There was a marked extension of retrosternal dulness, particularly to the right side, and in the left pleural cavity, there was complete dulness due to fluid.

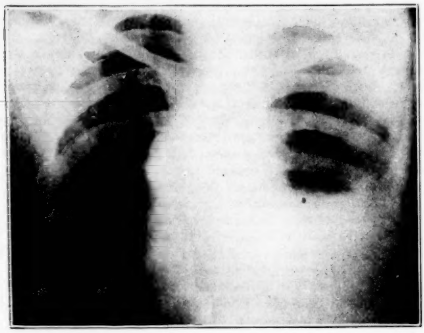


Fig. 18 (Case 8).—Deep-seated mediastinal tumor which caused difficulty in deglutition, Nov. 27, 1914.

Between the time of admission to the hospital, September 1, and the date on which I first saw him, Nov. 26, 1914, the patient had had the chest tapped, several Roentgen-ray treatments and rest in bed. However, his condition had remained very much the same (Roentgenogram of the chest is shown in Figure 18).

Treatment.—He was treated, Nov. 26, 1914, with 1,911 mg. of radium through 3 mm. of lead and 2½ inches of gauze over six areas on the front and back of the chest, each treatment being for three hours. Following this treatment, there was a very marked improvement in the subjective symptoms, cough almost disappeared, and the patient was easily able to sleep flat on his back. Prior to this radiation and subsequent to the treatment, a great number of total and differential blood counts were made. Both the Wassermann and the tuberculin reactions were negative. A typical blood count was as follows: red blood cells, 5,120,000; white blood cells, 5,280; hemoglobin, 90 per cent.; polymorphonuclear neutrophils, 77 per cent.; eosinophils, 2 per cent.; basophils, 0; small mononuclears, 15 per cent.; large mononuclears, 5 per cent.; transitional cells, 1 per cent., and many blood platelets. One of the slides was submitted to Bunting of Wisconsin, who decided that the blood corresponded to Hodgkin's disease. The right pleural cavity reaccumulated fluid and was tapped again, Dec. 31, 1914. Feb. 18, 1915, there was still fluid at the base of the right lung, but small in quantity. Feb. 19, 1915, the second treatment with 1,799 mg. of radium through 3 mm. of lead and 2 inches of gauze was given over four areas for a total of ten hours. After this treatment, the patient went home and reported by letter that he was much improved. The patient returned, May 20, 1915, and was treated with 1,619 mg. of radium through 3 mm. of lead and ¾ inch of gauze over six areas on the chest, one hour on each area. July 19, 1915, he was treated with 2,214 mg. of radium screened with 3 mm. of lead and 1 inch of gauze over six areas of the chest and back for one hour each. Nov. 8, 1915, he was treated with 2,148 mg. of radium through 3 mm. of lead and 2 inches of gauze through four portals for a total of ten hours. April 18, 1916, the patient was treated with 2,668 mg. of radium, screened with 3 mm. of lead and 1 inch of gauze over ten areas for one-half hour each. Nov. 2, 1916, he was treated with 451 mg. of radium through 3 mm. of lead and 2 inches of gauze through four areas, three hours each. April 22, 1917, the patient received treatment with 997 mg. of radium through 3 mm. of lead and 3 inches of gauze, six hours on each of two areas. After May, 1915, the patient ceased to have any symptoms of the disease. The roentgenogram, obtained Oct. 31, 1916, showed no evidence of hydrothorax. At the present time, he is apparently in perfect health, able to work and to walk. He takes exercise equal in vigor to that taken by most of the farmers of his locality. He has no cough and no tumor, as shown by the roentgenogram (Fig. 19). In this case it would seem that we are quite justified in believing that a permanent cure has been obtained.

1418 Eutaw Place.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HOLDING, PFAHLER, PANCOAST, BURNAM AND SHORTLE

DR. WILLIAM BENHAM SNOW, New York: Dr. Burnam has given us something absolutely new with reference to the possibilities of radium as affecting the cavities of the body. I understand he is getting these results from heavy doses and at a great distance. I was under the impression that radium should be placed in the affected tissues, but in these cases where tumors of such size and extent were reached by radium with the results shown, it seems there must be something more to be known in the technic. Dr. Shortle's subject is of importance in reference to roentgenology. The sun's rays make it possible for the surface to receive those radiations without too much blistering or action of the rays. I question the effect of the chemical rays. The noticeable effects of the ultraviolet rays, which are the sun's rays in distinction from the radiations from artificial sources, constitute really the point of consideration. I have been using light for a great many years and believe in it as one of the most important agents. As to how it affects tissues is a question. Clinically it has given these results. Radium penetrates into the tissues; the chemical rays do not penetrate. It either acts by reflex stimulation, which action is general, or stimulates metabolism. It is due to the effect on the whole body rather than by the local effects, as shown by the treatment of patients in the Alps. These children lie in the sunlight every day and all day. This can be done in the office with exposure to artificial light. In a rarefied atmosphere the lymphocytes

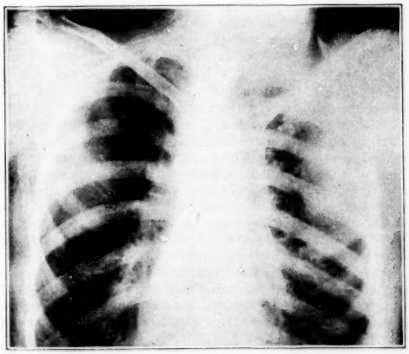


Fig. 19 (Case 8).—Almost complete disappearance of tumor Nov. 8, 1915, as a result of about six months' radium treatment; complete recovery of patient.

are more numerous and there is a greater effect on the tuberculosis. The real effect is due to hyperemia and metabolism. The best results are obtained when we employ the Roentgen ray in the treatment of the chest. I have been treating a group of patients in whom I have made a careful study of the effects of the Roentgen ray and light. I employ the Roentgen ray in these cases over the chest and light over the

rest of the body, realizing that the two effects counteract each other.

DR. JOHN A. P. MILLET, Buffalo: If we take the stand that the effect of radium application is due entirely to its local action, we are on dangerous ground. When we consider the profound effect of this substance on the blood-forming organs it does not seem unjustifiable to assume that at least some of its effects are due to a stimulation or depression of the immunologic forces of the body cells. This supposition is strengthened by the familiar fact that it is by no means possible to foretell the result of all applications on the basis of past experience. Two individuals having the same clincal condition may react quite differently to radium treatment. Using 50 mg. radium, we have been able to demonstrate profound changes in the blood picture of the patient under treatment, both during the application and for many weeks afterward. I was much interested, however, in Dr. Holding's description of the local effects as demonstrated histologically. In many cases, notably those of lymphosarcoma, we see huge masses disappear under the Roentgen ray or radium, while the patient goes rapidly down hill and dies. I should like to hear suggestions as to the mechanism of this breakdown of the body's defensive forces. Is it always due merely to absorption of toxic material, or may not the defensive forces in such cases have been injured by the intended remedial agent?

DR. ALBERT SOILAND, Los Angeles: There is a little friction between the schools of roentgenotherapists and radiotherapists. As Dr. Pfahler said, he uses Roentgen ray in some cases and radium in others. Why use both agents superficially? If there is a therapeutic difference on the skin, let us learn this difference. Personally, I have used both agents, but the Roentgen ray more extensively, and the results differ in no way from those obtained by Drs. Pfahler, Burnam and Holding, wherein radium has been the active agent.

DR. C. E. ALLIAUME, Utica, N. Y.: It seems necessary that every paper on the treatment of cancer or deep seated morbid growths by radium should be prefaced by a paper on the physics of radium, because the subject is usually not understood. It has been demonstrated that the rays of radium are more penetrating than those of the Roentgen ray. The gamma rays from a certain quantity of radium will penetrate 12 inches of solid lead or steel, and if this is true it is possible for the radium rays to penetrate through any part of the body. One of the reasons why a good photograph cannot be made with radium is because it is so penetrating that it does not throw the same shadow as the Roentgen ray.

DR. GEORGE E. PFAHLER, Philadelphia: In answer to some of these discussions, I should first like to make it clear that I believe radium and the Roentgen rays should never be used together through the same area of skin, because we are then using two agents which produce similar effects, and in which the dosage of each is difficult to measure and estimate. The action of radium and Roentgen rays are approximately the same if like character of rays is used, and in like quantity. The Roentgen-ray spectrum runs through a whole scale from soft to the most penetrating ray, and exciting a Coolidge tube with 100,000 volts produces almost the same rays as the gamma rays of radium. Even when 100,000 volts are passed through a Coolidge tube there are also produced a great many soft rays, in addition to the hard or penetrating rays, and likewise, with a specimen of radium, one gets a small quantity of hard and extremely penetrating rays and a much greater quantity of soft and slightly or moderately penetrating rays. Therefore, the ultimate action is similar with the same selection of rays and the same quantity. I am glad to speak on this point, and hope Dr. Burnam will contradict me or confirm what I say.

With reference to mediastinal growths, one cannot get such results as Dr. Burnam has described with small quantities of radium such as 25 mg. With a great mass of radium, which will permit of much filtration, one can, of course, produce such results. When using the Roentgen rays, however, one has a much larger volume of penetrating rays and all of Dr. Burnam's results can be produced by the Roentgen rays if efficiently given. When both are inefficiently given, neither will produce results.

DR. CURTIS F. BURNAM, Baltimore: I had not intended to make any comparison between the efficacy of Roentgen rays and radium rays. It is not true that they are physically the same thing. The hard gamma rays from radium are much more penetrating than the hardest Roentgen rays. My own experience would lead me to consider the gamma radiation from radium more effectual biologically than the Roentgen ray in connection with the treatment of new growths. This may not, however, be an actual qualitative difference, but due to the different of technic in radiation. The Roentgen ray employs a large quantity for a very short interval; the gamma radiation a similar amount for a longer interval. It is certain that with 100 mg. of radium at a given distance for ten hours secures a more pronounced biologic effect than with mg. for one hour.

In the cases which I have reported I feel that the results could be duplicated by the use of 3 or 4 mg., although I have used myself as much as a gram or two with some of them.

I should like to emphasize the point that there have been seven apparent cures out of eight cases, and these apparent cures have extended over considerable periods of time. So far as I have been able to ascertain from the literature, there has not been a single case of cure of a malignant mediastinal neoplasm through surgical means. I find that there are four or five cases reported in the last four or five years as healed or benefited by Roentgen-ray treatments.

Dr. Holding, I feel, goes too far in saying that no squamous cell cancer can be cured by radiation. They are unquestionably much more resistant than the basal cell type. In treating them the single dose method is much inferior to a frequently repeated dose. Care should be taken, however, never to produce irritation or the treatments will have to be interrupted and a complete result will not be obtained. It is highly important, as Dr. Holding has said, to have accurate histologic studies made of each growth before undertaking treatment, and I feel that the technic of treatment will vary with the type of growth. As Dr. Mallet has pointed out, and as I firmly believe, there are other factors connected with the resistance of the patient which are most important. The only clinical condition, however, which has impressed me as being of value in the prognosis is that a growth of a given type, which has recurred late after operation, or which is growing very slowly, is much more likely to be favorably influenced than one which is growing rapidly.

The Fourth Thousand Cases at Paignton.—Major D. Pearce Penhallow, chief surgeon of the American Women's War Hospital, Paignton, South Devon, England, has published an analytical report of the fourth thousand cases treated at the hospital between Aug. 20, 1916, and May 29, 1917, inclusive. Of the 650 surgical cases, 395 were cured, 243 were improved, ten were unimproved, and two died, one from cerebral abscess following a shrapnel wound of the skull, and the other from pulmonary embolism after a gunshot wound of the chest. Of the 350 medical cases, 120 were cured, 220 improved, eight unimproved, and two died, one from cerebrospinal meningitis and one from nephritis. Of the surgical cases the majority were brought to the hospital within five to twenty days from the time they were on duty. Of the medical cases the majority were brought to the hospital from seven to twenty-seven days after the beginning of their illness. The average time spent in the hospital was fifty days. Of the 104 in the hospital for ninety-eight days and upward, four were under treatment for more than ten months; seven from eight to nine months; eighteen between six and seven months; eighteen between five and six months; twenty-five between four and five months, and the remainder between fourteen weeks and four months. During this period there were fifteen convoys received from France, the patients in each convoy varying from 160 to thirty-eight and amounting in all to 1,184. At the beginning of the period there were 212 patients in the hospital, and at the close of the period there were 184 patients.

Clinical Notes, Suggestions, and New Instruments

VOLVULUS: REPORT OF A CASE

G. H. EDWARDS, M.D., ORLANDO, FLA.

Volvulus is one of the rarer conditions of the intestinal tract which produces ileus. The case here described is of unusual interest because of the nature of the onset and the portion of the intestine involved and its position.

E. S., a man, aged 62 years, worked for twenty years in cotton mills as operator and later as overseer. He has had hemorrhoids and chronic bronchitis for forty-five years, but rarely consulted a physician for these conditions and never for any other. In December, 1915, while digging a path in the snow, he had a sudden attack of pain in the abdomen which disappeared in a few moments. Later, tenderness developed, followed by pain and vomiting. A diagnosis of appendicitis was made. Operation was advised but refused. Two hypodermics of morphin relieved the pain, and after two days' repeated use of high enemas, the bowels began to move. The patient was in bed most of the time for six months thereafter with a marked obstipation, and usually with distention and pain on the left side. He was told that the pain was due to a "twist of the gut." Since that time he has had more or less tenderness in the abdomen, with increased formation of gas in the stomach and a gradual loss of weight.

The present disturbance began June 8. The patient worked in his garden until 10 a. m. The sun was bright and he stopped work because he felt dizzy. He ate an hour later he had a copious bowel movement and shortly afterward began to have a sense of discomfort in the abdomen. This increased gradually until 4 p. m., when he went to bed, thereafter spending most of his time in a modified knee-chest position, the assumption of which gave him some relief. Although the same medication was instituted which relieved his first attack, that is, paregoric and high enemas, without hypodermics, however, at midnight the pain became intense and the patient began to vomit. The first enema was colored and brought away a little gas, but the others had no effect. I saw the patient at 2 a. m., when the pulse rate was 70, respiration 28, and temperature 99.5. There was a soft fluctuating mass distending the abdomen on the left side, tender on pressure and tympanitic. A diagnosis of intestinal obstruction was made, probably due to volvulus. Operation was advised, and refused, because of recovery eighteen months before. Three-eighths grain of morphin by hypodermic gave some relief. I saw him again at 8 a. m. and 2 p. m. The condition was unchanged, the patient having dozed at intervals since the hypodermic. Operation was still refused. At 2 p. m. a second hypodermic of one-eighth grain of morphin was given and the family was advised to get another physician in consultation unless consent was given for operation. At 6 p. m. I was asked to come in a hurry as the patient had vomited fecal material. The tumor was still present, pulse 110, respiration 34, temperature 101. Consent was given for operation.

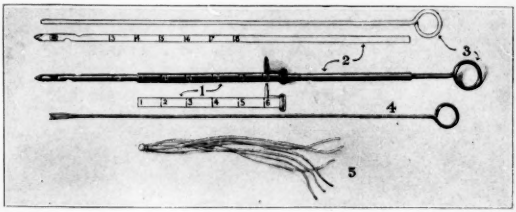
At 7:30 p. m. the patient was opened in the midline. A distended loop of large intestine filled the left side of the abdomen. This was delivered with difficulty and proved to be the cecum, about 15 inches long and 8 inches in diameter. The tip of the appendix, about 6 inches long, was in a mass of adhesions attached to the sacral prominence in the midline, and apparently around this point as a fulcrum the cecum, with its tremendously elongated mesentery, had made a half turn and lodged on the left side. There was no gangrenous tissue from the strangulation. By a simple twist the cecum fell into its normal position and its contents could be forced into the transverse colon. As the patient was moribund the appendix was hurriedly removed, a small reef was made in the mesentery, and the abdominal incision rapidly closed. The patient's life hung in the balance for five hours, since which time there has been progressive recovery.

A NEW APPARATUS FOR INTRAVENTRICULAR DRAINAGE

Y. C. LOTT, M.D., NEW YORK
House Resident, Neurologic Surgery, New York Polyclinic Medical School and Hospital

This instrument has been devised for exploring different regions of the brain and also as a means of instituting permanent ventricular drainage in cases of internal hydrocephalus, on the service of Dr. William Sharpe.

It consists of a dull-pointed ventricular puncture needle, 15 cm. long, with two eyelet openings near the end; a forked stylet 15 cm. long; a casing 6 cm. long; and a probe 15 cm. long; all are graduated in centimeters. When the ventricular cavity is entered, the stylet is removed, allowing the fluid to escape. If a permanent drainage is desired, the depth of the cavity is ascertained, Stylet 3 is removed, and the outer casing, 1, 6 cm. long, and also graduated in centimeters, is inserted over the puncture needle, 2, to the desired depth. There the casing is held in the proper position by means of the handle, and the puncture needle is now removed, leaving the casing, 1, in situ; a forked stylet, 4, graduated in centimeters, and 15 cm. long, carries the linen strands to the desired depth in the ventricles, and is held in place while the casing, 1, is withdrawn. Then the stylet, 4, holding the linen strands, 5, in the proper place and depth, is removed, and the linen strands are brought out through the cerebral cortex, the temporal muscle and fascia under the skin. The linen strands are very slowly absorbed (in from five to seven months), and in the meantime this artificial cortical channel is lined with endothelium about the linen strands, and permanent drainage



Details of apparatus for intraventricular drainage.

of the cerebrospinal fluid is thereby obtained. With this drainage apparatus, a minimum amount of trauma is done to the brain tissue, and the drainage material is left in situ at the point desired in the ventricles.

A RACK FOR FACILITATING THE HANDLING OF SMALL DEEP SKIN GRAFTS

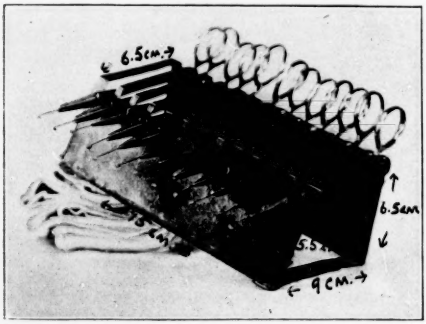
JOHN STAIGE DAVIS, M.D., BALTIMORE

The appliance here illustrated is for facilitating the handling of small deep skin grafts. When two or more are working on a large wound, the grafts are often cut faster than they can be applied. As a rule there is no convenient location to stack the artery clamps holding needles and grafts. In consequence an instrument is often upset or slips; the graft is brushed off, and is either lost, or much time is wasted in trying to pick it up. In order to eliminate this inconvenience. I devised this slotted metal rack to hold the clamps. The rack is made of 18 gage sheet copper, so bent that the end view shows the form of a trapezium. The longest side of this figure is used as the base, and to facilitate cleaning is open, except for three strips which are necessary to brace it. The twelve slots are made on the side opposite the base, and each is wide enough to admit the ordinary Halsted artery clamp.

The measurements are: base, 9 cm. long; surface carrying slots, 6.5 cm. long; sides, 5.5 and 6.5 cm. long. The full length of the rack is 15 cm. Longer racks may be made, but the size described is convenient for ordinary use.

The rack can be used with great comfort when one man is cutting and also placing the grafts. The twelve slots are filled and the rack is then moved close to the wound to be grafted, and all these grafts are then applied. This maneuver can be repeated as often as necessary, and it can be readily seen that an enormous amount of labor is saved, as without this frame each graft would have to be placed on the wound as it was cut.

When a large wound is being grafted with small deep grafts, the method of procedure is as follows: The rack, with its highest side toward the operator, is placed in a position convenient for him. Then as the grafts are cut the clamps are dropped into the slots, and when the cutting is faster than the placing, the clamps are moved along progressively toward the placer, by the nurse, so that those grafts first cut will be applied first.



Rack for facilitating the handling of small deep skin grafts. In the illustration the rack is tilted in order to show each slot. Note the dimensions. The rack is filled with Halsted clamps, each carrying a straight intestinal needle. The handles of the clamps are on the highest side of the rack. The slope is sufficient to prevent them from sliding, and thus brushing off the grafts, which can be seen on each needle.

1200 Cathedral Street.

AN ACID POLYCHROME-METHYLENE BLUE SOLUTION FOR ROUTINE AND SPECIAL STAINING *

E. W. GOODPASTURE, BOSTON

This solution has been found useful in staining frozen sections for rapid diagnosis, and as a differential stain for secretion granules, following eosin.

When methylene blue is boiled with an alkali, the two dyes, methylene violet and methylene azur, and probably others, are formed by oxidation. Unna recognized that this change gradually takes place in old alkaline solutions of methylene blue, and he utilized the resulting "polychrome-methylene blue" for special staining purposes. These dyes in combination with eosin (Romanowsky stain and modifications), applied to cells and tissue with proper technic, afford a great deal of differentiation and pleasing contrast.

The following method has been devised for the staining of frozen sections fixed in liquor formaldehydi and for staining paraffin sections fixed in liquor formaldehydi, liquor formaldehydi-Zenker or alcohol after eosin staining.

An acid polychrome-methylene blue solution is made from methylene blue (Koch f. bac.), 1 gm.; potassium carbonate, 1 gm., and distilled water, 400 c.c., dissolved thoroughly and boiled in a flask for thirty minutes. The methylene blue will be polychromed, and most of it precipitated from solution. When the solution is cool, glacial acetic acid, 3 c.c., is added. The whole is shaken thoroughly until the precipitate is dissolved, and then boiled gently for five minutes, or until the solution is concentrated to a volume of 200 c.c. It is cooled in tap water. The solution is ready for use immediately. It may be used over and over again; it does not precipitate, and it keeps indefinitely.

For staining frozen sections, a few cubic centimeters of the polychrome methylene blue solution are placed in a dish, and in this the sections are stained for one minute. They will not overstain if left much longer. They are then washed in water and mounted in water or glycerin, better in water. A good contrast is obtained in this manner. Nuclei are stained deep purple and connective tissue a bright rose red.

An acid polychrome methylene blue and eosin stain will be found very useful for staining differentially the zymogen, and the alpha and beta granules in the pancreas, after fixation in neutral liquor formaldehydi-Zenker, or liquor formaldehydi-bichromate. The fresher the tissue, of course, the better the preparation.

Forty per cent. dilution of liquor formaldehydi may be kept neutral with an excess of calcium carbonate or lead oxid. Immediately before the tissue is to be fixed, 10 c.c. of neutral liquor formaldehydi are added to 90 c.c. of Zenker's solution without acetic acid, or to 90 c.c. of 2.5 per cent. potassium bichromate. Pieces of tissue from 3 to 4 mm. in thickness should be used. They are fixed for twenty-four hours, washed in running water twenty-four hours, dehydrated in alcohol and embedded in paraffin.

Paraffin sections are treated with: (1) potassium permanganate, 1 per cent., one minute; (2) oxalic acid, 5 per cent., one minute, and are (3) washed thoroughly in water; then with (4) an aqueous solution containing 1 per cent. eosin and 1 per cent. potassium bichromate from one to five minutes; (5) washed hastily in water; then with (6) acid polychrome methylene blue, from one to five minutes; they are (7) washed hastily in water and differentiated rapidly in 95 per cent. and absolute alcohol, and treated with (8) xylene and balsam.

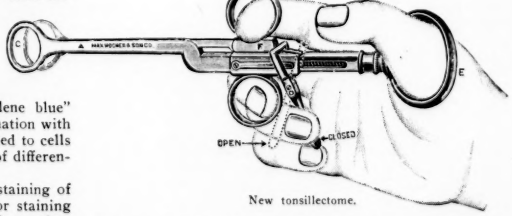
In properly stained sections, zymogen granules stain deep purple, protoplasm light blue, nuclei light purple, alpha granules brick red, and beta granules dark blue.

* From the Pathological Laboratories of the Peter Bent Brigham Hospital and the Harvard Medical School.

A NEW TONSILLECTOME

FREDERICK W. LAMB, M.D., CINCINNATI

I have been using Beck's tonsillectome with satisfaction for several years. However, I have had difficulty at times with the wire loops. It is annoying to have the wire slip out from under the set screw or slip through the hole in the stylet when it should be closing down behind the tonsil.



New tonsillectome.

To obviate this difficulty I have devised a blade to take the place of the wire. The cutting edge is dull and rounded so that in effect it is much the same as a wire. It is held in place by a set screw which passes entirely through a hole in the blade; therefore it cannot slip. It is in reality a permanent, nonbreakable, "nonslippable" snare which never requires rethreading. I have used this instrument in a great many cases and find that it enucleates the tonsil thoroughly and completely in its capsule leaving a smooth clean fossa and with a minimum amount of hemorrhage.

A CONVENIENT METHOD FOR RECORDING DATA ON ROENTGEN-RAY PLATES

C. D. BLACHLY, B.S., M.D., DRUMRIGHT, OKLA.

The articles necessary are a special ink described below, a stub pen, lead filings and a small blank card.

The ink is made by dissolving one part of liquid glue in five parts of water and adding sufficient carbolfuchsin or other dye to color it. The lead filings are made by filing metallic lead with an ordinary 8 inch steel file; one even finer is better.

The name, date, part to be photographed or other data required are written on the blank card in a round, plain, heavy script. The card is covered with the lead filings while the ink is still wet, and let stand for a moment. The filings which are not held by the glue in the ink are shaken off, and the card is ready for use. The card is laid on any convenient part of the plate while the plate is being exposed. When it is developed, the data will show up in clear, white letters that will not rub off or become dimmed by handling.

A NEW AND SIMPLE METHOD FOR COUNTING BLOOD PLATELETS*

REUBEN OTTENBERG, M.D., AND NATHAN ROSENTHAL, M.D., NEW YORK

A simple and easy method of counting blood platelets is greatly to be desired. The methods at present available are either too inaccurate or too difficult and time-consuming. The result is that platelet counts are not done as a routine and that our knowledge of their clinical significance is still rather meager.

The well known preservative effects of sodium citrate toward blood platelets suggested to us its use in counting them; and the obvious advantages of counting them in the same counting chamber as the red blood cells led us to devise what we believe to be the simplest and most accurate method.

This method has the advantage that it does not involve any additional step in a blood count, as the red cells are counted at the same time as the platelets. The trifling work required to count the platelets by this method should lead to the general adoption of the platelet count as a necessary part of a full blood examination.

The method consists of the use of 3 per cent. sodium citrate as diluting fluid. The blood is diluted 1:200 in the hemocytometer pipet as though for a red cell count, and a drop is put on the counting chamber cell in the usual manner. The counting chamber must rest for ten minutes before the count is made, to allow time for the platelets to settle to the level of the rulings. This is essential.

The platelets are counted in the same manner as red cells, and the calculation is the same except that for accurate work it is necessary to count at least twice as many squares, and when the platelets are diminished in number, three or four times as many squares as in counting red cells. The calculation then consists of dividing the total number of platelets counted by 2, 3 or 4, as the case may be, and then figuring as though counting red blood cells.

It is important for the beginner to learn to recognize platelets and to distinguish them by their size (which varies but little) and by their peculiar slightly greenish hyaline appearance, from granules or other foreign particles which may accidentally be present.

The count is made with the high dry lens (one-sixth inch is best) and preferably, though not necessarily, with a rather high power eye piece (No. 4, for example).

If desired, the platelets can be made to stand out more sharply by the addition of a stain to the diluting fluid. Cresyl blue (1:500) and methyl violet (1:500) are the best. The disadvantage of the stain is that the fluid has to be made up fresh each day, as a precipitate forms on standing. The addition of the stain, however, is by no means necessary.

We have used citrate solution in counting blood platelets for over two years, and have found that the results with it correspond closely in normal and pathologic cases with the results obtained by the Wright and Kinnicut method which we had previously used and considered the most accurate method then available.

The counts in normal cases have varied from 200,000 to 400,000. The lowest counts were in cases of purpura, in three of which we obtained counts of 1,500, 10,000 and 45,000. The highest count was in a case of pernicious anemia after splenectomy, 970,000.

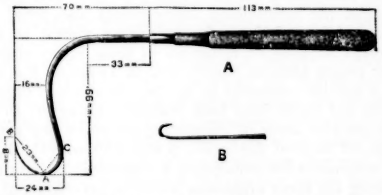
* From the Pathological Laboratory of Mount Sinai Hospital.

A TONSIL SUTURE INSTRUMENT

GEORGE E. HOURN, M.D., ST. LOUIS

This instrument was evolved as a result of several experiences in the control of postoperative hemorrhages following tonsillectomies occurring in the practice of Drs. Sauer and Burns of St. Louis.

With the suture needles to which we had access, there was an embarrassing difficulty in passing the needle through the posterior pillar near the base of the tonsillar fossa and then spanning the space to the anterior pillar near the base. When this instrument is introduced with the axis of the handle at right angles to the plane of the posterior pharyngeal wall, there is no difficulty in transfixing the posterior pillar at any point, even though the pillar projects but little above the pharyngeal wall surface. Then by swinging the handle through an arc of 90 degrees, the operator can with equal facility pass the needle through the floor of the tonsillar fossa and the anterior pillar. One can thus span across a space of approximately 23 mm. (*A* to *B*) without putting an undue



Tonsil suture instrument: *A*, the instrument, with measurements in millimeters; *B*, the hook for picking up loop of suture material.

tension on the pillars while picking up the loop of the suture material from the needle with a hook. With this object in view, it is important that the curve *C A B* is approximately as illustrated. The arc *A C* is that of a circle with a radius of 9 mm., and the arc *A B* is that of a circle with a radius of 19.5 mm.

The chief advantage of the instrument is its adaptability in passing the suture material through either the posterior or the anterior pillars at any point.

In catching the loop of suture before withdrawing the needle from the pillars, there is some advantage in using a hook, the free arm of which is bent slightly to the side, away from the plane of the handle; that is, one which has very much the shape of a minnow fish hook without its barb.

201 Humboldt Building.

Social Welfare and the Profession in the United States.—The pioneer clinic for industrial affections, the Clinica de Lavoro at Milan, has had to be taken for other purposes as the war advanced, and the public lectures delivered there have been suspended for the present. The concluding lecture by the founder and chief of the clinic, Professor Devoto, was an enthusiastic recital of what has been accomplished in the United States in the last five years in the line of protecting and caring for industrial and other workers. Devoto remarked parenthetically that very few, too few, medical women in Europe devote themselves to the study of hygiene, and yet this is a particularly promising field for them. "Where in Europe," he exclaimed, "is a medical woman to be found who has done among us what Alice Hamilton has done in Chicago."

Military Medicine and Surgery

TRIPLE TYPHOID VACCINE (BACILLUS TYPHOSUS, B. PARATYPHOSUS A, AND B. PARATYPHOSUS B.)

OBSERVATIONS ON THE RESULTS FOLLOWING INOCULATION OF MAN, WITH SPECIAL REFERENCE TO THE REACTIONS PRODUCED AND ANTIBODY FORMATION *

CHARLES F. CRAIG, M.D.
Lieutenant-Colonel, Medical Corps, United States Army
FORT LEAVENWORTH, KAN.

The necessity for protecting our oversea troops against the paratyphoid fevers has rendered inoculation against *Bacillus paratyphosus* A and *Bacillus paratyphosus* B imperative; and the fact that these infections occur also in our own country and will undoubtedly appear, sooner or later, in our large cantonments, made it advisable that the entire army should be inoculated as a prophylactic measure. The no less than wonderful results that have followed preventive inoculation against typhoid fever with the Army vaccine first prepared by Colonel Frederick F. Russell have encouraged the belief that preventive inoculation against the paratyphoid fevers would also prove as successful; and from the experience gained in the prompt stopping of epidemics of these fevers among our troops both in Mexico and in Texas by the use of a vaccine composed of the two paratyphoid organisms, our hopes have been realized. However, when the question arose of inoculating the entire new army with all three of the bacilli, it was realized that, from an administrative standpoint, a combined vaccine containing the three organisms would be preferable, as it would obviate a double series of injections and save much time and trouble from a military point of view. The use of such a combined vaccine would be justifiable only if the results, as regards protection from typhoid and paratyphoid, were comparable to those obtained with the use of the separate vaccines, and if the reactions, both general and local, following the injections, were not so severe as to preclude the use of the combined vaccine.

In order to obtain some accurate data on the question, I was requested by Colonel Russell to make a study of fifty men inoculated with the triple vaccine with special reference to the general and local reactions following its use, and the formation of agglutinins, and this contribution embodies the results of this study.

The Vaccine.—The triple vaccine was prepared at the Army Medical School, Washington, D. C., and contains 1,000 million typhoid bacilli, 750 million paratyphoid A bacilli, and 750 million paratyphoid B bacilli per cubic centimeter. The first dose is 0.5 c.c. and the second and third doses each 1 c.c. The inoculations were made subcutaneously and at intervals of seven days. Agglutination tests were made on twenty-five of the fifty men inoculated, the first test being made before the first inoculation, the second before the second inoculation, the third before the third inoculation, and the fourth and fifth at intervals of seven days following the third inoculation.

Material.—Fifty men were selected for the observations, twenty being provisional lieutenants attending the training school at Fort Leavenworth, twenty enlisted men of the Signal Corps, and ten reserve officers belonging to the Signal Corps Reserve. None of these men had been previously inoculated with typhoid or paratyphoid vaccine; none had previously suffered from typhoid fever, and all were in good health at the time of the inoculations. The temperature was taken before the inoculations and twelve hours and twenty-four hours afterward. Severe physical exercise was forbidden for twenty-four hours after the inoculations, and the men were excused from drill, but attended to all their other duties as usual.

GENERAL REACTIONS

It may be stated that the general reactions following the use of the triple vaccine were no more severe than those that follow the use of the typhoid vaccine alone, and did not appear to be as severe as those following the paratyphoid vaccine alone. This point was very carefully studied, and I have no hesitation in making the foregoing statement. This result was both surprising and gratifying as, from personal experience on the Mexican border with the paratyphoid vaccine, it was expected that the combined vaccine would give a considerable degree of general reaction. As stated, however, the reaction following the inoculation of the triple vaccine was no different than when the typhoid vaccine was alone used. An analysis of the symptoms observed after the inoculations is of interest, and demonstrates that the general reaction following inoculations of this vaccine, in the vast majority of cases, was so slight as to be almost negligible.

It may be stated here that it has been my experience that if typhoid vaccine is very carefully injected *subcutaneously,* the general as well as the local reactions are slight as compared to those observed after intramuscular injection or injection into the substance of the skin, and the severe reactions following intravenous injection are well known. This point is worthy of great emphasis, for there is no doubt that most severe general and local reactions are due to careless injection of the vaccine into the muscles or skin; and what is true of the typhoid vaccine will be found to be true also of the triple vaccine. In the only severe general reaction observed in this series the vaccine was apparently injected into a small vein, as the symptoms developed very promptly after the inoculation.

Temperature.—In the majority of cases the temperature was but slightly elevated after the inoculations, as shown in Table 1. The temperature was taken twelve hours after the inoculations and again in twenty-four hours after the inoculations. From this table it will be noted that 86 per cent. of those inoculated showed some rise in temperature after the second inoculation, but that only 32 per cent. showed a rise after the first dose, and only 18 per cent. after the third dose. Had the temperature been taken at hourly intervals up to the end of twelve hours, it is probable that all of the cases would have shown some

* From the Department Laboratory, Central Department, U. S. Army.

rise after the second injection; but those men that did not show any at the end of twelve hours stated that they had had no fever, so far as they were aware; so that if a rise did occur it must have been slight and transient.

It will be noted that the majority of the men showing a rise in temperature did not go above 100 F., and that in only a few did the temperature go above 101 F., even after the second injection, when the greatest rise in the temperature occurs after the injection of the straight typhoid vaccine. The one case showing a rise in temperature to 104 F. followed the intravenous injection already mentioned.

In almost all cases the rise in temperature was transient and had disappeared at the end of twenty-four hours, when the temperature was again taken. After the first dose of the vaccine only three cases showed any rise in temperature at the end of twenty-four hours; six showed a rise after the second dose, and none after the third dose. All six cases showing a rise of temperature at the end of twenty-four hours after the second dose were instances of delayed reaction, which will be mentioned later.

TABLE 1.—TEMPERATURE FOLLOWING INJECTION OF THE TRIPLE VACCINE

Temperature, F.	No. of Cases with Rise	Total No. Injected	Percentage
After First Dose			
99 to 100	6	50	12
100 to 101	5	50	10
101 to 102	4	50	8
102 to 103	1	50	2
Total with fever after first injection..	16	50	32
After Second Dose			
99 to 100	28	50	56
100 to 101	9	50	18
101 to 102	4	50	8
102 to 103	1	50	2
103 to 104	1	50	2
Total with fever after second injection	43	50	86
After Third Dose			
99 to 100	6	50	12
100 to 101	2	50	4
101 to 102	1	50	2
Total with fever after third injection	9	50	18

Headache.—After the first dose of the vaccine, twenty-one of those inoculated complained of headache, sixteen stating it to be slight and four pronounced, but not severe. All the others stated that they had no headache. After the second dose, twenty-five or 50 per cent., stated they had headache, of which number three stated that it was severe, six moderate, and sixteen slight. After the third dose only two men complained of headache, slight in character.

Pain in Back.—After the first dose, five of those inoculated complained of pain in the back, in the lumbar muscles, and one stated that it was severe. After the second inoculation only two men mentioned this symptom, and after the third dose, none.

Pain in Legs.—Three of those inoculated complained of pain in both legs after the first injection, and six after the second injection. These pains developed some hours after the injection, and in two instances were stated to be severe and neuralgic in character.

Diarrhea.—Of those inoculated, seven had diarrhea after the first dose of the vaccine and three after the second dose. In only one of these persons was the symptom stated to be severe, and he had partaken of food, which was probably a partial cause of the condition.

General Malaise.—General malaise was noted by twenty-five men after the first injection and by thirty-six after the second injection. After the third injection only three or four stated that they noted any disagreeable symptoms. In the vast majority of those noting general malaise it was slight in character, most of them stating that they felt tired or as though they were developing a cold; but in eleven cases the symptoms were quite marked and in eight sufficient to keep them in bed for an hour or two of the day following the inoculations.

Other Symptoms.—Of other symptoms noted or spoken of by those inoculated, the following deserve mention: cramps, in two cases; dizziness, in three cases; nausea, in ten cases; vomiting, in one case; chills, in one case, and polyuria in one case. The man showing chills, nausea, vomiting and polyuria was the one receiving the intravenous injection, and these symptoms are almost always present following the accidental inoculation of the vaccine into a vein. Nausea, always slight in character, appeared to be quite a common symptom after the second dose of this vaccine.

Delayed General Reactions.—While in most of the men inoculated the rise in temperature and other symptoms noted occurred within twelve hours after the dose of vaccine was received, a delayed reaction was observed in six cases, in which the rise in temperature did not occur until about twenty-four hours after the inoculation and the symptoms persisted for several hours after that period. In these cases the reactions were no more severe than those observed in the usual cases, the onset of the reaction simply being delayed. These delayed reactions appeared to be more numerous following the triple vaccine than after the typhoid vaccine.

LOCAL REACTIONS

The local reactions following the inoculation of the triple typhoid vaccine were no more severe than those following inoculation with the typhoid vaccine alone, as judged by my experience, and may be dismissed with a few remarks. The local reaction following the first dose was generally slightly less marked than that following the second, but in many instances there was practically no difference. After the third dose the local reaction, in the vast majority of cases, was practically nil.

Size of Areola.—The size of the areola showing congestion following the first injection varied considerably but, in the majority of cases, measured from 6 to 8 cm. in diameter. The swelling was not marked, and in only one instance did it involve more than the area mentioned, following the first injection. Following the second injection the congested areola, in a few instances, was from 1 to 2 cm. larger; but in most instances no difference in size could be noted.

Induration of Inoculated Area.—Slight induration occurred in the inoculated area in almost every instance; but in none was it marked.

Soreness.—All of those inoculated spoke of soreness on pressure over the congested area in which the

inoculation was received and of a sense of stiffness and slight pain on moving the inoculated arm. In none of the cases was the soreness anywhere near so marked as after smallpox vaccination, nor was there any pain in the arm at all comparable to that which often occurs after the latter vaccination.

Swelling of Axillary Glands.—Swelling and tenderness of the axillary glands on the side of the inoculation was noted in the majority of those inoculated. Thus after the first dose, twenty-five complained of soreness and enlargement of these glands; after the second dose, thirty-two presented these symptoms; but after the third dose, only six showed any swelling of the axillary glands. In none of the cases were the symptoms caused by the enlarged glands enough to cause much discomfort. An interesting point was noted in five cases in which the axillary glands of the opposite axilla were also swollen and tender.

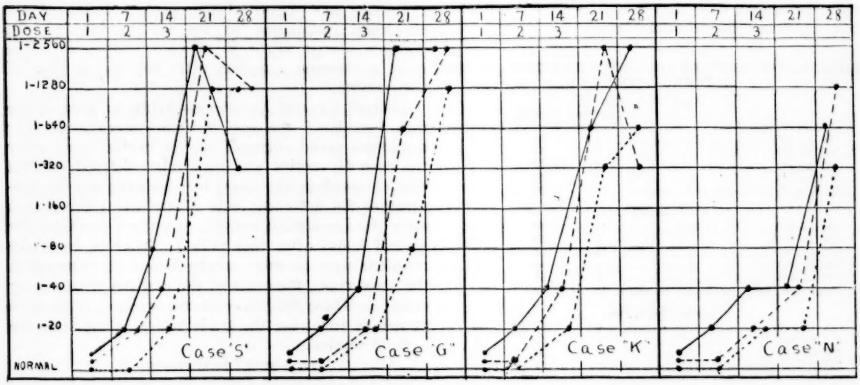
No other local symptoms were noted in this series of fifty cases of inoculation.

ANTIBODY FORMATION

No attempt has been made in this study to demonstrate the formation of other antibodies than agglutins; but as the agglutinin titer of a serum is a good index of what is occurring as regards the formation of other antibodies, it has been used to determine whether the triple typhoid vaccine gives rise to antibodies as readily as the straight typhoid vaccine.

Agglutination tests were made, as has been stated, on the day of the first dose of vaccine, before it was administered; at the end of seven days, before the second dose; at the end of fourteen days, before the third dose, and at the end of twenty-one and of twenty-eight days, making five agglutination tests in all.

As the agglutination tests are an index of antibody formation, we were especially interested in observing whether agglutinins were formed for each of the organisms in the vaccine and whether the agglutinin titer for the typhoid bacillus was influenced in any way by the combination with *B. paratyphosus* A and *B.*



Agglutination titers after administration

In concluding this discussion of the general and local reactions following the injection of the triple typhoid vaccine, I may say that, with the exception of the occurrence, perhaps more frequently, of slight nausea, and the delayed reactions referred to, the reactions have not differed from those that I have observed after the use of the typhoid vaccine alone, nor have either the general or local reactions been any more severe than those usually observed in the same number of persons inoculated with the typhoid vaccine. In fact, the majority of those receiving the triple vaccine did not themselves complain of any discomfort, and leading questions had to be asked in order to ascertain just what symptoms were really present. An interesting psychologic observation noted was that the young provisional lieutenants apparently noticed their symptoms, as evidenced by their speaking of them, much more than did either the enlisted men or the older reserve officers. Most of the enlisted men stated that they had no general reaction whatever, although at the time most of them were having slight fever, and, on inquiry, other symptoms could be elicited.

paratyphosus B. Charts were prepared in twenty-four cases in which the men were thus tested. The charts in all of the cases show conclusively that the combination with the paratyphoid bacilli does not interfere in the least with the production of agglutinins for *Bacillus typhosus,* and that the agglutinin titer obtained for each of the three organisms is satisfactory and indicates that the combined vaccine produces antibodies to all three organisms as well as when each is injected alone.

In making the agglutination tests the macroscopic method was employed in all instances, a formalized emulsion of the respective bacilli being used, and the agglutinations being read after twenty-four hours at incubator temperature. The readings were made each week without reference to the reading of the week before, and were checked by more than one observer, in most instances.

The charts of all the cases exhibit a remarkable uniformity as regards the agglutinin titer for each of the three organisms, and the following general discussion may prove of interest.

The average agglutinin titer for *B. typhosus*, after the three doses of vaccine, and at the end of the four weeks, was from 1:640 to 1:1,260, seven of the men showing the former titer and seven the latter. Five men reacted as high as 1:2,560, and four showed a titer of 1:320. In one case the titer never went above 1:80, and it is interesting to know that this man gave a very severe general and local reaction.

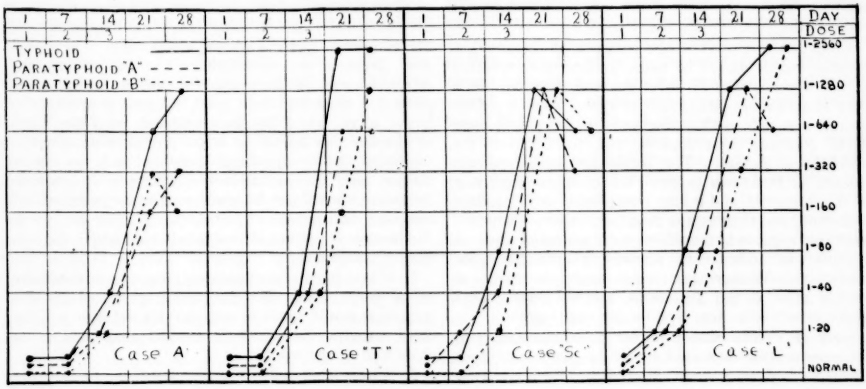
The agglutinin titer for *B. paratyphosus* A gave eight positive cases in a dilution of 1:2,560; four in a 1:1,280 dilution; six in a 1:640 dilution; four in a 1:320 dilution and two in a 1:160 dilution. As a whole the paratyphoid A series gave a slightly higher average agglutin titer than did the typhoid.

The agglutinin titer for *B. paratyphosus* B was lower than for either *B. typhosus* or *B. paratyphosus* A. This is not in agreement with the results of some English observers who found that the titer for B was higher than for A, but it may be that the tests made at a later period would have shown a higher titer for B, as it will be noted that the response to agglutinin formation is much slower, in nearly all instances, with paratyphoid B than with either typhoid or paratyphoid A. Of the paratyphoid B series, four gave a positive reaction in a dilution of 1:2,560, at the end of the four weeks; five, in a dilution of 1:1,280; four, in a dilution of 1:640; six in a dilution of 1:320; one in a dilution of 1:160; three in a dilution of 1:80, and one in a dilution of 1:40.

Table 2 illustrates the agglutinin titer for the three organisms at the end of the observation period, four weeks after the first dose of vaccine, and two weeks after the last dose.

Our observations show that no agglutinin production for *B. paratyphosus* B occurred until after the third injection in most instances, and that the greatest rise in agglutins occurred one week after this injection. On the other hand, agglutins for *B. typhosus* were demonstrable even a week after the first injection, in several instances, and the rise after the second injection, in the majority of cases, was rapid. In seven instances the agglutinin curve for *B. typhosus* became stationary or began to descend two weeks after the third injection of the vaccine. The response to agglutin formation was also more rapid in *B. paratyphosus* A than in *B. paratyphosus* B.

As stated, twenty-four of the inoculated men were tested as regards their agglutination curves; it was intended to test twenty-five of those receiving the vaccine, and in reality this number was selected, but one of the men was ordered away before the series was completed. This officer had received his third dose of the vaccine, and his blood was tested two days afterward and found to give a positive reaction in a dilution of 1:5,120, the highest agglutin titer observed in this series. At the same time his agglutin titer for *B. paratyphosus* A was 1:1,280, and the same for *B. paratyphosus* B.



of triple typhoid vaccine.

TABLE 2.—AGGLUTIN TITER OF CASES OF ADMINISTRATION OF TRIPLE VACCINE

Dilution	No. of Cases Typhoid	No. of Cases Paratyphoid A.	No. of Cases Paratyphoid B.
1:2560	5	8	4
1:1280	7	4	5
1:640	7	6	4
1:320	4	4	6
1:160	0	2	1
1:80	1	0	3
1:40	0	0	1
Total	24	24	24

CONCLUSION

The observations here recorded prove conclusively that the triple typhoid vaccine, with which I worked, and which is the vaccine now adopted for immunizing our entire army against typhoid and paratyphoid fevers, gives as good results in immunization, so far as can be judged by agglutinin curves, as does the typhoid vaccine alone, and that neither the general nor the local reactions following its injection are different in any degree from those occurring after the inoculation of simple typhoid vaccine. The results, both from a practical and from a theoretical point of view, are all in favor of combining the three organisms in a single vaccine, and it is believed amply justify the use of the triple typhoid vaccine in immunizing our troops against typhoid and paratyphoid fevers.

THE VENEREAL DISEASES

CHANCROID

(Continued from page 911)

NOTE.—*This is the second of a series of four articles on the management of venereal diseases with special reference to military practice. The first article on "The Diagnosis and Treatment of Syphilis" appeared September 15, p. 907. The articles have been prepared under the direction of the Surgeon-General by the Advisory Committee on Venereal Diseases, Dr. William Allen Pusey, Chicago, chairman; Dr. Francis R. Hagner, Washington, D. C.; Dr. Grover W. Wende, Buffalo, Dr. Sigmund Pollitzer, New York, and Dr. Henry H. Morton, Brooklyn, with Lieut.-Col. F. F. Russell in charge of Infectious Diseases. The series is published with the permission of the Surgeon-General, and will include the following: Treatment of Syphilis; Chancroid; Balanitis Gangrenosa; Acute and Chronic Gonorrhea, with its complications. The complete series will be issued in the form of a manual.*—ED.

Chancroid, more than gonorrhea or syphilis, is a disease of the careless and dirty. It is relatively uncommon among clean people. It is readily prevented by prompt prophylactic treatment: simple washing with soap and water after coitus greatly reduces the risk of infection with it.

Diagnosis.—Always in the presence of chancroid, a careful search should be made to determine whether or not there is also an infection with syphilis. In a very considerable proportion of cases, there is. One cannot rest safe with a diagnosis of chancroid, even when repeated examinations fail to discover the *Spirochaeta pallida*. The incubation period of the chancre is from two to three weeks longer than that of the chancroid, and it may emerge only in the healing chancroid, and then escape detection. Every chancroid must be regarded, therefore, as a potential case of syphilis; in addition to repeated examinations for spirochetes, Wassermann tests should be made at weekly intervals for six weeks, and the patient kept under observation for syphilis for two months.

General Treatment.—In order to hasten recovery, the patient with chancroid should be put to bed, kept clean, and given a nourishing diet. Rest not only makes for a prompt healing of the chancroid, but greatly reduces the danger of bubo. Destructive chancroids are seen in the dirty and debilitated. If patients with chancroids are kept clean and well nourished, healing is usually prompt, and extensive ulceration very rarely seen.

Local Treatments.—Abortive Treatment: In a certain proportion of cases of chancroid, abortive treatment is successful. The principle of all methods of abortive treatment is to convert the infected ulcer into a sterile one by the use of some destructive agent. This may be either the actual cautery, or one of several strong chemical caustics.

The thermocautery is perhaps the best agent for this treatment. The ulcer is thoroughly cleaned and well dried. Then the entire area of it is seared with a cherry red cautery. Every particle of diseased tissue must be destroyed. It should be done under a general anesthetic, preferably gas.

Chemical cauterization is done as follows: The ulcer is well cleaned, being first irrigated and then dried. Then a pledget of cotton wet with 5 to 10 per cent. solution of cocain hydrochlorate or novocain is applied to it. After anesthesia is produced the ulcer is dried as thoroughly as possible, preferably with blotting paper, in order to prevent the running of the chemicals subsequently to be applied. After it has been thoroughly dried, the entire surface of the ulcer, both edges and base, is touched with pure liquid phenol (carbolic acid) applied on a small cotton swab, care being taken to let no infected point escape. Then the excess of phenol on the surface is taken up, and nitric acid is applied lightly in the same way. The ulcer should be flushed immediately with sterile water to stop the action of the acid. Instead of nitric acid a saturated solution of zinc chlorid can be used. This is as active a caustic as nitric acid, and its action should be stopped as quickly after application by flushing with water.

After cauterization in any of these ways, the wound should be dressed with cold compresses of boric acid solution or similar bland solution. There results an acute inflammatory reaction, the slough is thrown off, and in successful cases, a healthy granulating surface is left.

The advantage of these methods of treatment is that, in successful cases, healing takes place quickly and the danger of bubo is almost eliminated. Their success depends on thoroughness in destroying the infected area. If the procedure fails to do this completely, it does less than good, because it produces a larger ulcer, which becomes infected from the focus of disease that has been left. Attempts at abortive treatment with superficial caustics, such as silver nitrate, are always failures. Attempts at abortive treatment should not be made unless the prospects of complete destruction of the diseased tissue are good.

Abortive treatment is contraindicated under the following conditions:

1. When the diseased area or areas are so extensive or so situated that the destruction produced by this treatment would result in considerable deformity. The chief situation in which it is contraindicated is in chancroid at the meatus.

2. When the inflammatory reaction is already intense and there is much edema. These would be increased by cauterization.

3. When there is inguinal adenitis. This would be aggravation by cauterization.

4. In healing chancroids. Here the infection is already under control and nothing would be gained by cauterization.

Abortive treatment will, of course, interfere with any further search for spirochetes. For this reason it should never be undertaken until every reasonable effort to find the spirochetes has been made. The early diagnosis of syphilis is so much more important than the prompt healing of a chancroid, that efforts to heal the chancroid should be given no consideration until the question of diagnosis is settled as far as possible. And after successful abortive treatment, there should be no relaxation in the weekly Wassermann tests or in the clinical observations until syphilis can be finally ruled out.

In all cases, except those favorable for abortive treatment, reliance is placed on cleanliness, the use of antiseptics, and measures to promote healing. The first principle in treating chancroids is to keep them as free as possible from pus, both to promote healing

of the ulcer and to prevent infection of the lymphatics. In all cases, for the effect of the heat as much as for cleansing effect, the patient should hold the penis in hot water for half an hour several times daily. Then the lesion should be given a copious warm irrigation with boric acid solution or mercuric chlorid, 1:10,000, or potassium permanganate, 1:3,000 or some other nonirritating antiseptic solution. Then the ulcer should be dusted with an antiseptic, such as iodoform (the preferable antiseptic), thymol iodid, calomel or argyrol. After this there should be applied a moist dressing of one of the solutions which are used for irrigating the ulcer. In very acute cases, a good dressing is one wet with aluminum acetate solution, one part of the 8 per cent. solution of aluminum acetate to seven or fifteen of water. The dressings must be kept continually moist and changed frequently enough to prevent accumulation of pus on the ulcer.

When for any reason it is impracticable to keep a wet dressing constantly applied, the next best course to pursue is to dust the ulcer after irrigation with a suitable antiseptic powder and then cover it with gauze, spread with petrolatum. Dry powders alone are not good applications for chancroids. They cake into crusts, under which the pus accumulates, and this materially increases the risks of infection of the lymphatics and the occurrence of bubo.

Occasionally in the course of healing of chancroids, the granulations become sluggish; in such cases, stimulation by the application of balsam of Peru works well, or the granulations may be touched occasionally with silver nitrate. If there is an overgrowth of the unhealthy granulations, they should be trimmed off with a knife or razor or seared with a cautery, and then dressed with iodoform and a wet compress.

In chancroids under a greatly swollen or long, tight prepuce, wet dressings cannot be used. In these cases prolonged soakings in hot water several times daily are particularly serviceable. After each soaking the preputial sac should be cleaned by inserting into it a catheter or a long flat syringe nozzle and thoroughly irrigating with hot antiseptic solution. After the irrigation there should be injected into the preputial sac from 2 to 4 c.c. of a suspension of antiseptic powder in oil or glycerin, such as 20 per cent. calomel, 10 per cent. thymol iodid or 10 per cent. iodoform in oil or glycerin. Of these, 10 per cent. iodoform in glycerin is best.

In patients with a long prepuce it is best not to make a dorsal slit, if progress can be made without so doing; for if a dorsal slit is made, the whole surface at once becomes chancroidal. Not infrequently in cases with intense reaction and great swelling no headway can be made while the prepuce is intact; in other cases the reaction becomes so exaggerated that, unless relief of tension is given, sloughing of the prepuce will occur. Under these conditions a linear slit along the dorsum of the prepuce should be made, and the case then treated as an open chancroid. A complete circumcision should never be attempted until the infection has entirely disappeared.

BUBO

Under the usual conditions of treatment of chancroids, when patients are not in bed, suppurative inguinal adenitis occurs in from 30 to 50 per cent. of the cases. But the factors that predispose to bubo are muscular activity and accumulation of pus on the chancroid; so that with patients in bed and with their chancroids kept free from pus, bubo is a relatively infrequent complication.

When bubo threatens, extra care should be used to see that there is no absorption of pus from the chancroid; the patient should have complete rest; and hot applications should be applied. If fluctuation develops, the hot applications are continued until the gland has fully broken down. When it is soft throughout and full of pus, a small incision with a double edge knife should be made, and the pus evacuated. Iodoform glycerin, 10 per cent., is then injected into the cavity. The emulsion should be injected three times at the first sitting. The first two injections run out and the last one remains in. The wound is then bandaged with gauze, moistened with solution of aluminum acetate, one part in seven of water, or boric acid solution, or some other antiseptic solution. On the following day, the wound is emptied by squeezing, and iodoform emulsion injected once and left in. The bandage is then applied, and in five or six days the wound is closed and healed. If after a week the wound is not closed, it should be injected again; this will usually result in healing in five or six days.

The method of injecting the wound with silver nitrate solution has been abandoned on account of the pain that it causes and because it is no better than the injection with iodoform.

The plan of encouraging suppuration and evacuating the pus through a small incision is satisfactory in most cases when the glands break down rapidly. But sometimes suppuration goes on very slowly; and in these cases, it is better to make a free incision, evacuate the pus, and dissect or curet out the partially broken down remains of the glands. Then the wound is packed with gauze and allowed to heal by granulation. It is better to avoid this course if possible, as the subsequent healing takes six or eight weeks, and requires daily dressing.

It was the practice a few years ago to endeavor to prevent suppuration in the glands by dissecting them out and trying to get a clean wound which was closed by suture. This practice has now been abandoned because it was found that a solid edema, or elephantiasis, of the penis and scrotum and inguinal region often followed, in consequence of the obliteration of the lymphatic vessels in the area of the wound. Another objection was that, when patients came to operation, suppuration had nearly always begun in the center of the gland, even though no fluctuation was evident; the wound was not aseptic and could not be closed, but had to be left open for the slow process of healing by granulation.

BALANITIS GANGRENOSA: EROSIVE OR GANGRENOUS BALANITIS

In connection with chancroid, attention is called to this venereal infection, which, while rare, is important, because of its destructive course if unrecognized and treated as chanroid.

(To be continued)

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SATURDAY, SEPTEMBER 22, 1917

THE OBJECTIONS TO RAW EGGS IN THE DIET

In the classic experiments on digestion in the human stomach which Dr. William Beaumont conducted nearly a century ago on Alexis St. Martin, the patient with a gastric fistula, it was noted that native egg white leaves the stomach very rapidly in comparison with other foods, including cooked egg white itself. This observation has repeatedly been confirmed in experiments on animals, and is doubtless correct. It is furthermore the presumable basis for the widespread impression that raw eggs are very easily digested, "inasmuch as they are 'chymified' in one and a half to two hours as against three for soft-boiled eggs."

Experiments conducted in vitro with raw egg white have demonstrated that this mixture of proteins is notably resistant to the digestive action of the gastric enzyme, pepsin, and likewise exhibits conspicuous antitryptic power. These are properties indicating sufficient obstacles to digestion in the case of the native product to place it almost in a class by itself among albuminous substances. Several years ago, Mendel and Lewis[1] of Yale University called attention in a casual way to the poor utilization of raw egg white in animals as exemplified by the diarrheas to which it can give rise. In the same laboratory, Bateman[2] has made an extensive study of this phenomenon. Native egg white was found to be a decidedly indigestible substance in dogs. When fed in any considerable quantity it invariably caused diarrhea and sometimes induced vomiting. The severity of the symptoms depended largely on the amount of material ingested, but also, to a less extent, on the individual susceptibility of the subject. After the ingestion of even small amounts of native egg white, the latter could be recovered unchanged in small quantities from the stools of the experimental animals; and when the amount ingested was large, the proportion of coagulable protein in the feces was correspondingly increased. Even when the feces appeared normal, undigested egg white could usually be recovered, in contrast with the fact that as a rule albumin is not found in normal feces. Strangely enough, a tolerance to the raw egg white seems to be developed in the course of a few days, although prior to this an albuminuria may sometimes be detected. Even after an apparent tolerance manifests itself, the utilization of the egg white protein has not been found to exceed 85 per cent.

According to the report of Bateman,[3] this deportment of egg white noted in several species is by no means unknown in man. He cites numerous instances to show that raw eggs may cause diarrhea and vomiting, and that the utilization of the native whites in the human alimentary tract is often found to be as low as 50 per cent. All of this information may seem somewhat startling in view of the reputed prescription of raw eggs in dietotherapy and its recommendation by prominent writers in this field. Without quoting the seemingly fabulous advice of Ely[4] that physicians should throw away their tonics and "lead the stomachs of their patients up to the egg-an-hour practice," we may remind our readers that the use of from six to twenty-four whites daily is still advocated in widely read texts on the therapy of tuberculosis, the advice being to employ the raw product.

It should be clearly understood that although it is not difficult to find indications of the poor utilization of native egg white, so that one wonders whether such indigestible protein may not frequently reach the large intestine and become pabulum for putrefactive bacteria, the same criticism does not apply to the cooked product. Heating to 70 C. (158 F.) removes the partial indigestibility and puts egg white into the category of readily assimilable nutrient. Acids and bases likewise can effect a change in the same direction. The resistant properties of the egg white appear to be associated with the albumin fraction. The effect is not peculiar to the egg of the common fowl, since it has likewise been observed after feeding uncooked egg white from the egg of the duck. In contrast to egg white, egg yolk appears to be well digested and utilized.

Various considerations now make the popular advocacy of raw eggs seem inadvisable. Bateman[3] has summarized the problem as follows: "A substance which fails to stimulate a flow of gastric juice and is antipeptic, which hurries from the stomach, calls forth no flow of bile, and strongly resists the action of trypsin, which is poorly utilized and may cause diarrhea, has evidently little to recommend it as a foodstuff of preference for the sound person, let alone for the invalid. And when the native protein needs only to be coagulated at 70 C. in order to obviate almost all the effects mentioned, there appears to be still less

1. Mendel, L. B., and Lewis, R. C.: Rate of Elimination of Nitrogen as Influenced by Diet Factors, Jour. Biol. Chem., 1913, **16**, 55.
2. Bateman, W. G.: The Digestibility and Utilization of Egg Proteins, Jour. Biol. Chem., 1916, **26**, 263.
3. Bateman, W. G.: The Use of Raw Eggs in Practical Dietetics, Am. Jour. Med. Sc., 1917, **153**, 841.
4. Ely: The Fable of the Egg, New York Med. Jour., 1903, **78**, 928.

reason for using it uncooked." This does not mean, of course, that raw egg is toxic in the correct sense of the word. The reputed relation of excess of egg white to renal damage and the frequent occurrence of hypersensitiveness to its proteins offer additional reasons for debating the wisdom of a liberal use of raw eggs.

EVERY DAY IS FISH DAY

In the search for new or little appreciated sources of palatable foods to meet the shortage that the war has brought to the entire civilized world, some consideration has already been given to fish. From a physiologic or nutritional standpoint, this type of animal food commends itself on account of its comparative richness in precisely those nutrients — proteins and fats — which at present command the highest prices. The fact that no special feeding or nurture is required to produce the common fish of our markets puts them into striking contrast, from an economic standpoint, to the various types of meat that are obtained as the result of the prolonged feeding of animals originally valued at a liberal price, through a period of growth and the process of finishing for the market. The cod, the mackerel and the shad, for example, require no management comparable to the methods of animal production in farm practice. The essential features of expense lie in the capture and marketing of the food.

Beef contains from 2 to 3 ounces (from 60 to 90 gm.) of protein per pound; fresh fish, such as cod, haddock, halibut, mackerel, perch, salmon and shad, furnish from 1½ to 2½ ounces, while the commoner dried fish contain as much as 3 ounces. From the standpoint of cost, on the other hand, 25 cents will purchase about as many calories of energy, and far more protein, when expended for salted cod at 15 cents a pound, and decidedly more nutrients when expended for smoked herring at 16 cents a pound, than can be obtained in the form of medium fat beef at 35 cents a pound. Admittedly it is not always justifiable to compare foods on the basis of price and calories alone, for there is a quality as well as a quantity factor involved. But with fish and other forms of flesh, the chemical features of the tissues are far more nearly alike than would be the case in a comparison of, let us say, corn meal and beef. For, after all, muscular tissue is chemically much the same in the vertebrate animals, the chief variations being in the unlike content of water or of fat.

Professor Ward[1] of the University of Illinois has pointed out that an entirely unjustified prejudice, or rather a series of prejudices, has stood in the way of the more widespread use of fish as food. In commending the new slogan, "Every day is fish day," Ward indicates the serious objection to the custom of purchasing fish only on Friday. The work of the fisherman, he rightly says, covers more than a single day in the week, and to be efficient from the economic standpoint and satisfactory for the public, the fish business should be encouraged by the distribution of the demand over a larger part of the time.

The food purchasers of this country are losing valuable opportunities to extend the variety of edible products in this period of stress through an ignorance of the advantages or possibilities offered by some of the little used fishes. The prejudices engendered through ignorance or tradition in turn limit the satisfactory development of the fish-producing and fish-distributing industries. Even inland the opportunities are not so limited as is commonly supposed, so that a more liberal use of fish is not necessarily restricted to the regions bordering on the coast line of this country.[2] As instances of such neglected nutrient products Ward mentions the burbot, a fresh-water fish belonging to the cod family, which is sufficiently palatable to be regarded as a delicacy in continental Europe. The bowfin is a Mississippi basin fish that yields a smoked and salted product of satisfactory flavor. The carp, which is caught far inland, likewise has acquired an undeserved prejudice. Among ocean fish the tilefish and the sable-fish are destined to come into popular favor; while the rapidly increased demand for the grayfish, a new candidate for recognition in this country, though long used along the Mediterranean, suggests something in the nature of psychologic popularity promoted by the familiarity with whitefish and bluefish.

If butter substitutes can become popular despite the prejudice that was long created and maintained against them, if other cereals can win their way as competitors of wheat for popular favor in human nutrition, surely widespread reminders of the value of fish can and ought to create a demand for these wholesome products even in cases of little recognized merit. Strange names have not militated against many other novelties that have become household words. As Ward says, most families plan for fish once a week or less frequently; if they do not find just what they want available, they are apt to pass by, and meat is substituted. Thus for one cause or another the average fish consumption in the interior portion of the country falls far below that which obtains in the Old World, or that which should exist here when our extensive and splendid supply of fish food is taken into account. Fish are worthy of a more prominent place in the dietary despite the fact that they are not the unique "brain food" that an antiquated fancy would have them be, and despite the unsupported belief that they are concerned in the transmission of cancer. Like other perishable products they are liable to

1. Ward, H. B.: The Housewife and the Fish Problem, Jour. Home Economics, 1917, **9**, 369.

2. The Bureau of Fisheries has recently published a series of economic circulars for the purpose of educating the public on the value of various fish and the best methods for preparing each kind.

objectionable decay; but this is not an insurmountable obstacle with present methods of food hygiene and practical conservation. Hence we accept the slogan, "Every day is fish day."

THE SIGNIFICANCE OF CREATINURIA

Although creatin cannot be called a normal constituent of the urine in the same sense in which the invariably occurring creatinin, urea or uric acid are so designated, it is nevertheless found under circumstances that are strictly physiologic in character. Creatin is present only occasionally and in small quantity in the urine of adult men. It occurs in the urine of women post partum, and is usually present in the urine of children in which it may be equivalent in amount to a considerable portion of the closely related creatinin. In disease, particularly such types as are attended with partial starvation, creatin is also likely to make its appearance in the kidney output.

The explanation of the origin of this unquestionably important product of metabolism has remained a puzzle for many years. Nothing is known of the function of the creatin in the muscle and other organs; and it cannot be stated even yet whether creatin is a waste product or a substance that plays some direct regulatory or constructive part in the workings of the tissues. Quite as undetermined is the meaning of the excretion of creatin under what apparently are very special physiologic conditions. Hypotheses have not been wanting.[1] Thus, Mendel and Rose, among others, have suggested as a result of their experiments on starving subjects that creatinuria is in some way closely connected with the metabolism of carbohydrates. The excretion can often be repressed by liberal feeding of sugar. The occurrence of creatin in the urine of diabetics has tended to substantiate this theory. McCollum and Steenbock have obtained results which point to a connection between creatinuria and protein metabolism. Recently Underhill has suggested the possible connection between creatinuria and acidosis.

The investigations of Denis[2] at the Massachusetts General Hospital tend to lend additional weight to the alleged intimate relation between creatin excretion and protein intake. As Denis points out, the conditions under which creatin excretion has been noted in man, namely, in starvation, in childhood, in pregnancy, in fevers, and in hyperthyroid disease, are all conditions accompanied by a high level of protein metabolism. The observations of Krause that small quantities of creatin are frequently found in the urine of women may also possibly be attributed to the relatively high protein intake of women when considered from the standpoint of their muscular development.

It has been noticed that creatin sometimes occurs in the urine in cases of hyperthyroidism. Such patients often exhibit an insatiable appetite. Denis has now collected results in five cases of exophthalmic goiter in which it is shown that the amount of creatin excreted by these individuals is dependent on the intake of protein, being increased by high protein feeding and decreased or even eliminated by low protein feeding. Comparable results have now been obtained for children, in whom it is shown that the amount of creatin found in the urine is directly dependent on the intake of protein, being high when large quantities of protein (creatin-free) are ingested, decreasing and in some cases disappearing entirely when the child is fed on a diet of an extremely low protein content. As a working hypothesis it has been suggested that on the ingestion of protein some fraction of this is transformed into creatin, transported to the muscles, and there absorbed. If so much creatin is manufactured that the muscles become supersaturated, creatin is excreted by way of the kidney. What would constitute supersaturation would depend not only on the total mass of muscle, but also on the capacity for creatin absorption possessed by the muscles. Creatinuria in normal children is therefore due, the Boston investigators venture to assert, to the relatively high protein intake which is the rule with practically all children; that it may also be due to the low saturation point of immature muscle is suggested by the small creatin content of the muscles of children and by the relatively low level of protein consumption at which appreciable quantities of creatin are excreted. In the light of such intimations it is not impossible that the elimination of creatin, in contrast with creatinin, may in ultimate analysis furnish some physiologic index to the quantitative need of protein at various ages and in various conditions of well-being.

1. Some of these are summarized by Denis, W., and Kramer, J. G.: The Influence of Protein Intake on Creatine Excretion in Children, Jour. Biol. Chem., 1917, **30**, 189, from which those mentioned above are quoted.

2. Denis W.: The Influence of the Protein Intake on the Excretion of Creatine in Man, Jour. Biol. Chem., 1917, **30**, 47. Denis, W., and Kramer, J. G.: The Influence of Protein Intake on Creatine Excretion in Children, ibid., p. 189.

THE USE OF VOLATILE IRRITANTS IN COLLAPSE

Any one who has followed the results of the modern scientific study of drugs which have long had a place in empiric medicine must have been impressed with many unanticipated disillusionments. The alleged remedial virtues of more than one widely heralded "vegetable remedy" have persistently avoided the inquiring search of the unbiased therapeutic investigator. Alcohol, long vaunted in its various guises as a prince among stimulants, has been forced to accept the demonstrated rôle of a depressant. Alleged antiseptic washes have proved to retain essentially the hygienic value of cleansing water. The searchlight of truth has no respect for traditions, alone.

These lines are inspired by a timely investigation of the effects of volatile irritants which are among the sub-

stances in common use to combat conditions of threatened or actual circulatory failure.[1] It has truly been said that the clinical use of the so-called circulatory stimulants, such as the volatile substances of a highly irritant nature which are given by subcutaneous or intramuscular injection in shock or allied conditions, is based, not on exact experimental observation, but on casual bedside impression and tradition. It is conceivable that they may act directly on the circulation; or they may provoke a reflex action as a result of the intense irritation of sensory nerve endings which is well known to lead to rise in blood pressure.

At the Department of Pharmacology in the College of Physicians and Surgeons, New York, Lieb and Herrick[1] have watched the effects of injections of alcohol, ether, camphor and ether, camphor and oil, and turpentine in animals decerebrated so that the pain factor would be entirely excluded. When these irritants were introduced directly into the blood stream no direct action on the circulation, other than threatened or actual collapse, could be observed. Injections at various regions of the skin provoked a reflex rise in blood pressure. The sensibility of the sites varied in accord with earlier observations on the comparative sensibility of various parts of the body surface, in the following tested order: (1) the nasal septum; (2) pads of the feet; (3) pads of the hands, and (4) the general body surface. The duration of the response was brief at best, usually less than fifteen minutes, and often so transient that only a few seconds were involved. Any measure which destroyed or profoundly depressed the function of any part of the reflex arc involved prevented any blood pressure raising effect from the subcutaneous injection of the volatile irritants. The investigators, therefore, cannot escape the conviction that the transitory rise in pressure which these medicaments produce is entirely reflex in character. The heart plays little or no part in the process, the response being effected through the vasomotor apparatus.

It seems impossible to overlook the bearing of such carefully controlled observations on the use of camphor in oil, alcohol, and allied irritants in clinical routine. They may find a place in cases in which, as the New York pharmacologists express it, with cutaneous sensibility present and reflex irritability preserved, an irritant injection may rouse flagging energies for a momentary emergency. Yet in conditions of abolished reflex irritability, as in anesthesia and shock, the effect is nullified; and in conditions of hemorrhage with falling blood pressure the irritants are of little avail. The possibility of actually inducing shock by the traumatism of the injections should not be lost sight of. For the clinician we must therefore commend a careful consideration of these statements of Lieb and Herrick: In circulatory deficiencies, the result of traumatic or toxic insult to the central nervous system, an irritant injection may fairly be called an added burden and may well accelerate oncoming shock. It is a two edged sword and may be an instrument of collapse. The use of such a measure to stimulate an anesthetized or profoundly prostrated or unconscious patient has no experimental justification. This places a serious burden of proof on the clinical enthusiast.

1. Lieb, C. C., and Herrick, W. W.: The Reflex Action of Volatile Irritants on the Circulation, Arch. Int. Med., May, 1917, p. 811.

Current Comment

A BRITISH COMMITTEE OF INQUIRY

August 3 the Central Medical War Committee, which acts as an advisory body to the English government on medical matters connected with the war, addressed a note to the Secretary of State for War informing him that in its opinion no more medical men could be called on to take commissions in the Royal Army Medical Corps without seriously endangering the supply of physicians for the treatment of the civil community, and that further depletion would only be effected on the responsibility of the government after carefully comparing the military with the civil needs. Following this a series of questions were addressed to the War Office and the House of Commons by a member of the latter in which it was alleged that the number of medical officers claimed by the military authorities for use abroad and at home was in excess of actual requirements. Our readers may remember that some time ago we published a rather long abstract of a report on conditions medical in France by Lord Charnwood. This, if we mistake not, was supposed to be an exhaustive report and one that would satisfy those who were criticizing the British medical military administration. This, however, does not appear to have been the case. A Committee of Inquiry into the Army Medical Service has been constituted, and has gone to France.

It has been directed to inquire into various matters connected with the personnel and administration of the Army Medical Service in France, and afterward to carry out similar investigations in the United Kingdom. The committee consists[1] of a general officer who has held many important military commands in peace and war, Sir Francis Howard, and the secretary,

1. The Committee of Inquiry is composed of the following members: Major-General Sir Francis Howard, K. C. B., K. C. M. G. (chairman); Sir Rickman John Godlee, Bt., K.C.V.O.; Sir Frederick Taylor, Bt.; Sir William Watson Cheyne, Bt., K.C.M.G., C.B., M.P.; Lieut.-Col. H. J. Stiles, M.B., C.M., F.R.C.S.; Dr. Charles Buttar; Dr. Norman Walker; and Dr. J. B. Christopherson, F.R.C.S., F.R.C.P. (secretary). Sir Francis Howard, who distinguished himself in the Sudan campaign of 1898 and during the South African war, was Commander-in-Chief of the Western Command in 1905-7, and Inspector of Infantry 1914-15. Sir Rickman Godlee, Sir Frederick Taylor, and Dr. Buttar are members of the Central Medical War Committee, the last named being Chairman of its Executive Committee. Sir Watson Cheyne, who is a consulting surgeon R.N., as well as M.P. for the Universities of Edinburgh and St. Andrews, is a member of the Reference Committee of the Royal Colleges in England, as are also Sir Rickman Godlee and Sir Frederick Taylor. Dr. Norman Walker is convener of the Scottish Medical Service Emergency Committee. Lieut.-Colonel Harold J. Stiles is the well-known Edinburgh surgeon who in addition to other war work is Deputy Inspector of Military Orthopedics (for Scotland). Dr. Christopherson, the secretary, saw service during the South African war, and is Director of the Khartoum and Omdurman Civil General Hospitals.

Dr. Christopherson, well known for research work and as an administrator in the Sudan. Of the six medical members, five are members of one or more of the committees which act in an advisory capacity to the Army Medical Department, the Central Medical War Committee, the Committee of Reference of the Royal Colleges in England, and the Scottish Medical Service Emergency Committee. There is no doubt that this committee will secure much information of value to the British government and to its allies.

"O WAD SOME POWER . . ."

This pertinent comment and well deserved criticism appeared in a recent issue of the *New York Medical Journal:*

The logic of the advertiser, particularly a certain sort of advertiser, is indeed weird. In an advertisement of a health (?) food in the *American Review of Reviews* for August we find a testimonial from Arnold Bennett, as follows: "The tonic effect of ———— is simply *wonderful!*" The advertiser then goes on coolly to say, "In the face of such unparalleled proof, etc."

And turning listlessly through the advertising pages of the same issue of the *New York Medical Journal* we select, from many of the same type, an advertisement of "Ammonol, The Stimulant, *Ethical* Antipyretic and Analgesic." There we learn, in part, that this very ordinary mixture of acetanilid, ammonium carbonate and baking soda "is a specific in Fevers, Neuralgia, Atonic Dyspepsia, Pneumonia, Gastralgia, Bronchitis, Coryza, Catarrhal Influenza, La Grippe, Rheumatism, Hysteria, Alcoholism, Amenorrhea, Dysmenorrhea, Uterine and Intestinal Colic, Obstinate Vomiting, Catarrh of the Bile Ducts and Jaundice." Then we appreciated that, as the *New York Medical Journal* said, "the logic of the advertiser, particularly a certain sort of advertiser, is indeed weird." We would also hazard that the logic of certain editorial writers — possibly it would be more correct to say publishers — is also weird. Or is it possible that our contemporary obeys the injunction, Let not thine editorial right hand know what thine advertising left hand doeth?

THE LIE WITH CIRCUMSTANCE

"The Commissioner of Health directs me to call to your attention the enclosed advertisement issued by T. B. Wheeler, M.D., Company, Montreal, Canada, in which the name of the Association's JOURNAL is being used."

Accompanying this brief note to THE JOURNAL from the secretary of Dr. Haven Emerson, Commissioner of the Department of Health of the City of New York, was a four page leaflet devoted to the exploitation of "Wheeler's Tissue Phosphates." The trend of the circular is to lead the average reader to infer that THE JOURNAL of the American Medical Association has endorsed Wheeler's Tissue Phosphates. For example, in describing the preparation one reads:

"It embodies . . . the best recent scientific opinion concerning the treatment of the disease (tuberculosis) as stated . . . by the official JOURNAL A. M. A."

Elsewhere in the circular THE JOURNAL'S criticisms of the hypophosphites and the glycerophosphates (proprietary preparations which are competitors of the Wheeler product) are quoted and twisted into a tribute to the ingredients of Wheeler's Tissue Phosphates. Garbling quotations, distorting statements, separating phrases from their contexts and omitting qualifying clauses, all for the purpose of making out a case for some proprietary remedy is a trick as old as quackery itself. That it should be used in advertising Wheeler's Tissue Phosphates is entirely fitting. Obviously, the T. B. Wheeler, M.D., Company esteems the opinion of THE JOURNAL on pharmacologic matters. This being the case, it should, in the interest of truth and scientific accuracy, publish in its advertising circulars just what THE JOURNAL has said about Wheeler's Tissue Phosphates. It could not do this better than by quoting from a recent editorial note which commented on a report of the Chemical Laboratory on this preparation.[1] Here is part of the THE JOURNAL'S comment:

"'Wheeler's Tissue Phosphates' is an unscientific shotgun mixture whose most active and powerful drug is the alcohol it contains. That it was not years ago relegated to the realms of obsolete and discarded preparations is a commentary alike on the lack of scientific discrimination and on the power of advertising."

Here we have "Wheeler's Tissue Phosphates" stripped of the verbal camouflage with which its exploiters have invested it.

AMERICA—THE MEDICAL MILITARY UTOPIA

Under the heading "Medical Activity in America," the *Medical Press and Circular* comments:

The rapid strides that medical organization has taken in the few months since the declaration of war, are a source of wonder to the slower moving bodies on this side of the Atlantic. 'Sinapis,' in a leader of some weeks ago, alluded to the absolute necessity of having medical representation in Parliament if organized medical effort is ever to be effective here. In hoping that we may be able soon to thank fortuitous circumstance for such a blessing, we symbolize the nature of our progress under tradition-bound administration. In the States, the lessons of the Spanish-American war were not forgotten, and the inclusion of numerous medical men in the highest war councils was the first step toward an almost magical transformation in medical circles that has become a reality, even though immense distances and scattered cities militated against easy organization. These results are seen in every American medical journal that reaches us. Base hospitals in large numbers have arrived at the Front, many thousands of surgeons and physicians have gone to France secure in the knowledge that all has been done by the State to safeguard their interests in every way. Not only have the medical rank and file been mobilized and prepared, but the governing provisional councils have laid out a program which includes a most detailed preparation for the medical requirements of a great army, from provision as to hastening medical graduation, to the establishment of special colleges for the immediate education of nurses, and of all who can possibly be trained to lighten the work thrown upon the men who are left behind. And all this has taken place without a hitch, while here, whole countrysides are deprived of medical aid, while the powers that be content themselves with a policy of steady negation without the saving clause of an alternative method.

"And all this has taken place without a hitch." Who could believe it? Apparently it is necessary to go

1. Wheeler's Tissue Phosphates, THE JOURNAL A. M. A., May 5, 1917, p. 1337.

abroad to find out what is going on at home. We thought that THE JOURNAL was keeping up; now we see that it is hopelessly behind and we despair of ever catching up with the speedy progress outlined by our British contemporary.

GERMANY AND SURGICAL PROGRESS

Many years ago the late Dr. Nicholas Senn said that America led the world in surgical achievement. We have been led to believe by others that Germany was the fountain head of surgical knowledge and the source of all scientific wisdom. Sir Berkeley Moynihan is inclined to disagree so far as Germany is concerned. In a recent article[1] he asks:

"What, then, has been Germany's part in all the astounding progress of modern surgery? It has been the same in surgery as in every other science. Almost all fundamental discoveries in science, Dugald Clark tells us, have originated in England, France and Italy. In capacity for original thought the German mind is lacking. The brilliant and happy inspiration, the penetrating insight, the new vision are things for which we seek almost in vain in all German scientific literature. The fertile new thought giving a fructifying impulse to the work of others is rarely indeed of German origin. The German mind is of quite a different order. It is avaricious, industrious, methodical; it collects, if it does not accurately appraise, the work of others. It tabulates and registers and explains; it furnishes an intricate analysis, and illustrates by copious reference any subject with which it may deal. The new idea, originating almost always elsewhere, is given eager hospitality, is dissected and discussed at inordinate length; it may be put into practice with various alterations of technical procedure, and before long is claimed as a home product.."

For this act of intellectual dishonesty Sir Berkeley Moynihan would not blame many of the German writers, although a study of the literature of almost any subject in medicine, chosen at random, will show the amazing infrequency of any reference to English or American literature, and very few indeed to the French.

1. The Institutes of Surgery, Brit. Med. Jour., Aug. 11, 1917, p. 171.

Physiologic Observations on Body Temperature.—The temperature of the human body is not constant, but is known to exhibit a distinct cycle during the twenty-four hours, the maximum appearing between 4 p. m. and 8 p. m., and the minimum between 2 a. m. and 6 a. m. The difference, although the actual maxima and minima are not the same in different persons, may be said to be between 1 and 2 degrees F. The natural explanation of this cycle is that it reflects the diurnal variations of bodily combustion, in particular that going on in the muscles; and this surmise is borne out by numerous observations, such as those of Simpson and Johannsson to the effect that absolute muscular rest in the fasting condition greatly reduces the amplitude of the daily variation. Gibson, Osborne and Simpson have also shown that the temperature cycle conforms to local time; that is to say, if a person's day maximum has been found to occur at 6 p. m. (New York time) in New York, it still occurs at 6 p. m. (Greenwich time) when he comes to Glasgow, and not at 1 p. m., as it should were the rhythm independent of bodily activities. It ought, therefore, to follow that the temperature cycle in a man who works at night and sleeps by day is reversed, the maximum appearing in the early morning and the minimum in the early evening. Some observers, such as Jaeger, who reported on army bakers, claimed that the expected reversal really occurred; but their methods were inexact, and the careful observations of Benedict led to the conclusion that the curve was modified, but not reversed.—Report of British Health of Munition Workers Committee, July, 1917.

Medical Mobilization and the War

EXEMPTION OF MEDICAL STUDENTS AND INTERNS

Regulations Concerning Procedure

Additional methods of procedure for carrying out the regulations prescribed by the President for exempting medical students and hospital interns (THE JOURNAL, Sept. 8, 1917, page 830; also, Sept. 15, 1917, page 917) have just been issued by the Surgeon-General's Office.

APPLICATION OF INTERN OR STUDENT NOT CALLED

Interns and students who shall not have been called by a local board may enlist in the Medical Enlisted Reserve Corps, such enlistment entitling them to discharge from draft if thereafter called.

An application for enlistment under this paragraph must be forwarded to the Surgeon-General with the affidavit of the applicant, supported by the certificates of his school authorities, showing his present status as intern or student, and particularly how long he has been an intern in the one case, or the year of the medical course that he is pursuing in the other.

INTERNSHIP LIMITED TO ONE YEAR

An intern who has served one year or more as such will not be enlisted in the Medical Enlisted Reserve Corps under this regulation.

MAY ENLIST LATER IN MEDICAL RESERVE CORPS

An intern who is enlisted in the Medical Enlisted Reserve Corps hereunder will be called into active service under his enlistment, if his services are needed, at the end of one year of internship. Applications for commission in the Medical Reserve Corps, from interns who at the expiration of one year's internship are called for duty as members of the Medical Enlisted Reserve Corps, or from interns whose year of internship is about to expire, will receive proper consideration.

MEDICAL STUDENT MUST COMPLETE COURSE

A medical student (undergraduate) who is enlisted in the Medical Enlisted Reserve Corps hereunder will be called into active service under his enlistment, if his services are needed, on failing to pass from one class to another, or on failing to graduate.

THOSE CALLED BY DRAFT BOARD

Interns and students who shall have been called for service by a local board under the selective draft law, may be discharged from the draft, on condition that they shall enlist in the Medical Enlisted Reserve Corps.

CALL TO ACTIVE DUTY

It will be the policy of the Surgeon-General as a rule to recommend discharge from the draft on the condition indicated, the discharge to be followed by a call to active duty under the enlistment in the Medical Enlisted Reserve Corps at the expiration of a complete year of internship or on the failure of the student (undergraduate) to pass to the next higher class or to graduate.

REPORTS OF STATUS NECESSARY

Interns and students who are enlisted in the Medical Enlisted Reserve Corps by virtue of these regulations, and are not called into active service under such enlistments, are required to report their status to the Surgeon-General as follows:

Interns, at the end of each three months' period, such report to show the total amount of internship since graduation, and to be countersigned and attested by the medical superintendent of the hospital.

Students, at the end of each semester, such reports to show whether the students qualified for advancement, and to be countersigned by the deans of their respective schools or by subordinate officers representing the deans.

RECOGNIZED INTERNSHIPS

In the execution of these regulations the department will not recognize internships in hospitals, sanatoriums or other institutions conducted for profit, or in small private hospitals (fifty beds or less), or new internships established or added since May 18, 1917, to those previously existing, at any hospital, excepting such as may have been newly established and added by reason of a proportional increase in the bed capacity of such hospital; nor will it recognize internships in the case of any graduate appointed thereto later than August 1 following his graduation.

NEWS OF THE TRAINING CAMPS

At Fort Benjamin Harrison

Changes continue the rule in almost every company of the training camp. Two of the companies have lost two of their four instructors, while two others have lost their entire instructing staff, the officers concerned being in every instance recalled to their National Guard units. There have been two new companies formed, and one of the original companies has been split up and distributed among the others. The total number of student officers, including those attached to detached units, is 1,203.

PISTOL PRACTICE

Pistol practice has now been indulged in by all the older companies. The story is current among medical circles in the Army that permission to use the range in the past has been denied the medical brethren because general anxiety was felt lest their marksmanship should grow to exceed their professional skill and render them dangerous rivals to their fellow officers of the line. This makes a good story, but it would hardly seem justified in point of fact, if we are to judge from the majority of the scores registered in the recent trials. A great deal of credit, however, must be given to those officers who through incessant patience and vigilance were able to carry the trials through without the occurrence of any untoward incident.

EQUITATION

Equitation continues to absorb the attention of those of the companies which have been fortunate enough to reach that part of the camp schedule. It is surprising to learn how many of the men have never ridden a horse before, but it must be gratifying to Major Snyder under the circumstances to see how well these initiates manage to stick on. From all accounts the instruction is highly practical, to say the least of it.

LECTURES

An illustrated lecture was given during the early part of the week of September 9, on the subject of "Typhus in Serbia," by Lieutenant Mitchell, who was sent out under the auspices of the American Red Cross after the preventive measures instituted by the American commission had accomplished their end. His description of the enormously high incidence of the disease at the height of the epidemic was startling and went far to emphasize the acknowledged achievements of Dr. Strong and his associates.

One of the instruction companies had the privilege of listening to a splendid address by M. Jean Alcide Picard of the French Quartermaster Corps, formerly a lieutenant of infantry at Verdun, on the subject of pro-German propaganda. His suggestions for the suppression of propagandists were interesting, especially in that they showed how great an inportance is attached to this phase of enemy activity by our transatlantic allies. M. Picard is at present traveling under the auspices of the Young Men's Christian Association, and spends all his time addressing troops in the various camps and cantonments.

A description of the Albee technic for bone-graft surgery was read to the student officers, followed by a moving-picture reel illustrating a transplant of bone from the tibia to a fractured humerus.

PERSONAL

Capt. Russell M. Wilder, assistant adjutant, is still absent on leave, but is expected to return shortly.

Lieut.-Cols. van Pool and Shockley have been assigned to duty at the training camp as instructors.

Capts. E. B. Moss and Trautman and Lieutenants Burt, Cromwell, Mead, Ross, Boyle, Lewis, Hayes, R. Ballantyne and Martin have been relieved of duty as instructors and ordered to rejoin their respective commands.

Major C. Frothingham, M. R. C., has been appointed instructor of Company 11, and is to be assisted by Lieuts. A. Bowen and E. W. Phillips.

Lieut. M. C. James has been appointed instructor of Company 8, to replace the officers ordered away.

COMPANY NEWS

Company 2 has been so depleted by assignments of its members to detached commands that the remnants were scattered on Saturday, September 15, and distributed between the various other companies. On Saturday night the remaining members gave a farewell dinner in honor of Major Baehr, the company instructor, at the Hotel Severin, Indianapolis.

Companies 4 and 7 bivouacked together one night last week on the estate of Capt. F. Hutchins. Their example was followed later by Companies 1 and 5. The camp was named Camp Scott in honor of Colonel Scott, who planned and led the expeditions.

Company 8 was given a lecture and practical demonstration of the method of erecting a field hospital by Major Creighton last week. This exercise proved most instructive.

At Fort Oglethorpe

Doctors, short and tall, thin and stout, old and young, optimists and pessimists, a conglomerate mass, 1,200 of them, down here to do their bit and incidentally to get a new grip on life: they go at things with an avidity that is suprising. They all realize that this is the opportunity of their lives to give abused bodies and minds a new lease on life. The majority are wofully "out of whack." Sedentary life has put some of them in the invalid class but few are so far gone that they have "cut their bridges behind them." What a jolt they get when they are informed right at the beginning of the course of instruction that their new duties will be 95 per cent. military and 5 per cent. medical! They are here to receive orders and not to give them and this makes them feel that "the worm has turned."

At 5:45 a. m. the recruit is routed out of bed to go through a series of setting-up exercises. He strips of all superfluous clothing and for twenty minutes he squats, bends, twists, squirms, crawls, hops, jumps till he cries enough. During this period the enthusiasm is unbounded and the recruit returns to the barracks rejuvenated and with a feeling of well being that he had not known was possible. A month of this work does wonders. Protuberant abdomens disappear, and the protuberance appears higher up between the shoulders. Stiffness gives way to elasticity, and coordination takes the place of awkwardness. The doctor undergoes a metamorphosis so that his patients would not recognize him. One prominent physician from Philadelphia lost 25 pounds in weight, reduced his waist measure 9 inches and improved his general appearance to such a degree that when he went home on a leave of absence, his children hung on to his wife's skirts and wanted to know who that strange man was.

The *esprit* in this camp is splendid and I have seen very few individuals who had the proverbial "streak of yellow." Every man does his work (and it is real work), uncomplainingly and ungrudgingly. All feel that they are interested in a common cause and each man is putting his shoulder to the wheel.

Our working day is not determined by any labor union; we are at hammer and tongs from sunrise to sunset. Between setting-up exercises, drills, lectures, quizzes, French and other studies, we have no time to give way to morbid introspection. The mess call is the most popular call in camp. Food never tasted so good as it does here in camp. This is due in part to the fact that combustion in each one of us is very active, but the food is judiciously selected, properly prepared and with the right combinations in the menu. The physical training of the camp is under the supervision of Capt. Albert McConaghy of Philadelphia. His methods of whipping men into shape are unique and are based on sound physiologic principles. He explains that it is his purpose "to so guide and direct the doctors along the lines which make for a healthy action of all the functions of the body, combined with a proportionate symmetrical development, as to produce that fulness of bodily health and muscular activity which are the natural birthright of every normal man, woman and child."

At Fort Riley

There are today 1,020 physicians from private life undergoing training in this camp. It is a big melting pot, into which professional men from all parts of the country, of every degree of standing, are thrust for three months'—more or less—intensive instruction and drill to be transformed into officers for the Army. It is a big task. To take Dr. Brown of Paducah Center, Neb., away from his country practice and from the comforts and coddling of his family and subject him to the discipline and discomfort of a soldier—to teach a man who has been accustomed to submit to no superior control to sink his individuality and become an efficient unit in Uncle Sam's great war machine—this is the task the Medical Department of the United States Army is performing here.

The first lesson, and perhaps the hardest, for the doctors to learn is that they are no longer doctors but army officers. They have not only to learn how to act as such, but the military spirit must become a habitual attitude of mind.

They must learn how to obey commands instinctively and unquestioningly so they may be able to command such instructive and unquestioning obedience from the men who are to be placed under their control. The majority of these medical reserve officers are to command units of the medical department of the new conscript army, and on them will devolve the responsibility for the efficiency of these units in the field of operations. They must learn how to provide rations, clothing and shelter for their men, they must learn how to obtain and account for their medical supplies, they must learn all the details of field army operations so that their units may coordinate perfectly with the line organization in combat. Knowledge of medical and surgical technic is of subsidiary importance. The Army takes it for granted that all of us already are sufficiently well equipped as professional men. It is of the highest importance, however, that an officer should know how many rations each of his men is entitled to and where they come from, where he is to obtain his medical supplies, and how he is to dispose of his sick and wounded.

As soon as this fact percolates into the reserve doctor's mind, he understands the significance of the training given him here, and enters into the work with a loyalty and good will that produce rapid results. It is a strenuous life. The first note of the bugle sounds at 5:15 a. m., and from then till taps at 10 p. m., the student officer has hardly a moment of leisure. There are two hours of drill. No matter how hot the day, back and forth the one-time doctors tramp. It is "fours right" and "about face"—over and over again—and the drill instructors explain and explain again the movements and then scold and storm because awkward feet do not promptly obey the command. Then there are classes in which the instructors try to cram into the heads of their pupils the dry and intricate details of army organization and field tactics. One of the biggest tasks is to learn the exact minutiae required in Army correspondence. To the average physician, who notoriously is careless in the keeping of accounts and records, this is doubly difficult. But it must be learned. To the dotting of an "i" and the crossing of a "t" the Adjutant-General's Office requires the most painstaking attention to detail in the making out of reports, requisitions, etc. Any inattention to detail is sure to bring the letter or report back for correction. And Uncle Sam keeps a watchful eye on all of his property. Every tent peg, every penny must be accounted for.

What perhaps impresses the student medical officer most strikingly here is the physical training. Most of them come here with flabby muscles and protuberant abdomens, stooped shoulders and weak calves. They have ridden in automobiles, eaten heartily, smoked heavily and perhaps were accustomed to a good deal of alcoholic stimulation and have never taken any exercise to amount to anything. Here the first thing every morning is physical exercise when a lot of muscles whose use had almost been forgotten through neglect are again brought into play; and the last thing in the afternoon is an hour and a half of "hiking" over the hills, facetiously called "equitation." So far, few of the officers have got anywhere near a horse. It is "shank's mare" they ride, and a poor steed she proves to be at first. We doctors are not only made to walk, but we are run until our tongues hang out and the sweat streams down our backs and soaks through our puttees. Many of the heavy weights straggle by the wayside, winded, and all except the young men come in thoroughly tired. But a cold shower has surprising restorative powers, and after a hearty supper and a night's sound sleep, few there are who do not awaken fresh and vigorous for another day's grind. Men who have been here since June are brown and hard, trained to a physical efficiency that will be able to undergo any test the battlefields of France may offer.

It is not like home here. It is no picnic. It is a foretaste of war; and we can expect that Sherman's dictum will prove true. An Army reserve officer who expects to have a private room with bath and linen and silver dining table service had better disabuse himself of the idea at once. Here they live in barracks built a good deal like sheep sheds, 130 men to each barracks, and crowded so closely that only about 12 inches is allowed between cots. In the mess halls there is hardly elbow room and, of course, the furniture is of the crudest sort. But the food is good and plentiful, and the hard exercise and outdoor life give keen appetites and excellent digestions. Under such conditions, dyspepsia is almost unknown. Should these student officers never see a battlefield, this physical training will be of inestimable value to them. They will have learned how to keep strong and healthy.

An Oculist in a Cantonment Camp

The following is part of a letter from Dr. Casey A. Wood of Chicago, who writes from Camp Sherman, Chillicothe, Ohio. The letter was not written for publication.

"It is rather hard on the old man to rise at 5:30 in a 'well ventilated,' fireless building and go outdoors to another, also fireless, building for washing purposes, including an ice-cold shower bath if one has the heart and nervous system for it. It will require one week more of work to finish our special eye, ear, nose and throat hospital, but when it is equipped it will be admirably adapted to our needs. As there are only about 4,000 troops here, I have had very little to do, except to get acquainted with my surroundings and my colleagues—among the latter are our genial and hard working commander, Major Kinnard; C. R. Holmes of Cincinnati; J. A. Harvey of Chicago; Roger S. Morris and Alfred Friedlander of Cincinnati; Charles E. Barnett of Fort Wayne, and many others. The hospital has 1,000 (expansible to 1,500) beds, comprising 55 buildings, all connected by glassed-in corridors. The officers' quarters are good and the victuals of the best. We expect to get into permanent quarters, with a real table, chair and perhaps bed—I would like a cot just as well—and wash-stand, in about ten days. Sanderson's Evanston and N. W. University Unit volunteered in a body today; they are quartered next to our building, to act as noncommissioned and privates. We need about 400 in the Base Hospital Service. Outside, the 4,000 are drilling, drilling from morn to eve. Officers say they are more enthusiastic than regulars."

MILITARY SURGEONS AND CIVILIAN GUESTS TO HOLD SPECIAL MEETING AT FORT BENJAMIN HARRISON

CAMP FIRE AND BARBECUE

The Association of Military Surgeons will hold its annual meeting in the Medical Officers' Training Camp at Fort Benjamin Harrison, near Indianapolis, Ind., October 8 to 10. Aside from the papers to be furnished by the program committee there will be much of interest to all physicians in the exhibition of the work of training of physicians to become medical officers which is going on at this camp. There will be displays of the organization and field work of regimental detachments, field hospitals and evacuation hospitals. Instead of the usual social diversions and receptions accompanying the meetings of the association, it is planned to have the evenings spent in the open about great camp fires with songs, vaudeville and talks by officers who have had service in the present war. For one evening a big barbecue is planned.

SPECIAL ARRANGEMENTS FOR CIVILIAN PHYSICIANS

Civilian physicians will be welcome to attend the meetings, and those bringing their own blankets or cots and mattresses can be accommodated with lodging and food in the camp at a cost of $1 per day. The number of officers in the camp at this time, together with the visitors, will exceed 1,300.

Physicians Recommended for Commission in Reserve Corps

During the week ending Sept. 15, 1917, 420 physicians were recommended to the Adjutant-General of the Army for commission in the Medical Reserve Corps, the proportion being eleven majors, fifty captains and 359 lieutenants.

Red Cross Division for Work in Belgium

A special department under the American Red Cross Commission to France to direct all Red Cross activities in Belgium was recently announced. Dr. Ernest P. Bicknell, formerly director-general of the civil relief of the American Red Cross and now deputy commissioner to Europe, is to be placed in charge of the work in Belgium. Assisting Dr. Bicknell will be Rev. John Van Schaik of Washington, D. C.

Intensive Training in Orthopedic Surgery for Special Medical Officers

For those members of the Medical Officers Reserve Corps, or those intending to apply for commission, who have had only a general surgical training and who desire to be assigned to the orthopedic service of the Army, a course of intensive instruction in the fundamentals of orthopedic surgery, as

related to the military service, has been arranged. This course is of about six weeks' duration, and will be given at various universities. Those interested may obtain full information from Major E. G. Bracket, director of the Department of Military Orthopedic Surgery, Surgeon-General's Office, Washington, D. C.

Red Cross Issues Manuals for Making Surgical Dressings

The American National Red Cross has issued 500,000 manuals on the making of surgical dressings. These are now being sent out to the various Red Cross chapters throughout the country. The manual was prepared by Dr. John A. Hartwell, New York, and a committee of surgeons, nurses and lay workers, on the basis of recent hospital experience both in this country and in the war zone.

Casualties in Base Hospital No. 5

The War Department announces the following supplementary list of wounded at Base Hospital No. 5 following the air raid, September 4, at 11 p. m.: Lieuts. Ray W. Whidden, M. R. C., New York; Thaddeus D. Smith, M. R. C., Neenah, Wis.; Clarence A. McGuire, M. R. C., Kansas City, Mo. It was in this same attack that Lieut. William D. Fitzsimmons, M. R. C., of Kansas City was killed. Two privates of the medical department and one of the medical enlisted reserve corps were killed, and several other privates and nurses were wounded.

St. Louis Contribution to the Medical Reserve Corps

The last number of the weekly *Bulletin* of the St. Louis Medical Society states that out of its membership of 850, 134 have applied for commission in the Medical Reserve Corps. Their names are listed in the *Bulletin*, and those who are already in active service are indicated. There are sixty-nine of the latter. This shows who are not slackers in the St. Louis Medical Society. We commend to other societies that issue bulletins this idea of publishing the names of those who have accepted commission in the Medical Reserve Corps.

Medical Sections of State Councils of National Defense to Meet

The Committee on State Activities and Examinations of the General Medical Board has decided to bring together for conference the members of the various state committees, medical section, Council of National Defense at the Clinical Congress of Surgeons of North America which is to be held the week of October 22 in Chicago.

The committees will assemble on October 22 in the hall provided for the purpose in the Congress Hotel of Chicago, where booths will be assigned to each committee. Here they may receive and give information to medical men attending the congress from their respective states, and arrangements will be made to conduct examinations for enrolment in the Medical Reserve Corps.

On the afternoon of October 23, a general business meeting of the committees will be held with the chairman, Dr. Edward Martin, presiding, at which time matters of importance will be discussed and provisions made for a later meeting in the week to carry out plans that may be necessary as a result of the discussion at the preliminary meeting.

Organization of Senior Military Medical Association

Surgeon-General Gorgas recently called a representative committee of the older physicians to Washington for conference, and it was there arranged that an organization of the physicians past the age of 50 years (the age limit for admission to the Army and Navy Reserve Medical Corps) should be formed, and that it should also admit physicians under 55 years if they are kept at home by reason of teaching in medical schools or being unable to pass the severe medical examination required for admission to said Medical Corps. At this meeting the Senior Military Medical Association was formed. The purpose of the association, it is stated, is to serve the government by performing such medical work as the members are capable of, especially at or near the member's residence. Its members mostly can do only part-time work, but some are able to go from home and do full-time service. The arrangement will probably be a contract with the government to do special service, with a military grading. The pay will be according to the grading and work performed. It is felt that the members of the association can act as consultants in general and special physical conditions of recruits and conscripted men; also, in matters of sanitation and hygiene, and in making general physical examinations and mental and special examinations and in working in local hospitals or established places or cantonments where the sick or injured men may be sent; or those where fitness may be brought about in men medically rejected from admission to the service; also in performing any other work they may be capable of by the direction of the government.

Men may apply for admission to the S. M. M. A. by filling out the blank card which will be supplied on request to Dr. Alexis Dupont Smith, secretary, and returning it properly filled out with $1, the annual dues made necessary to cover postage and incidental expenses.

For the present, residential limit of eligibility for membership includes Pennsylvania, New Jersey, Delaware and Maryland. When points remote from Philadelphia have organized units or branches of the S. M. M. A., membership may be transferred.

The following officers were elected: president, Dr. W. W. Keen; secretary-treasurer, Dr. C. B. Longenecker; chairman, executive committee, Dr. William Duffield Robinson, all of Philadelphia, and secretary, executive committee, Dr. Alexis D. Smith, 5926 Greene Street, Germantown.

Orders to Officers of the Medical Corps

Col. G. A. Skinner, M. C., in addition to his other duties, is designated as post surgeon, Fort Sam Houston, Texas.

Lieut.-Col. T. L. Rhoads, M. C., to Syracuse, N. Y., reorganization camp, for duty.

Capt. Francis X. Strong, M. C., from El Paso, Texas, to Washington for duty.

Lieut.-Col. Louis T. Hess to duty at Charleston, S. C.

Capt. A. D. Davis, M. C., to Tenafly, N. J., for duty as camp sanitary officer during the construction of cantonment at that place.

First Lieuts. R. D. Bryson, E. B. Erskine and C. O. Reed, M. C., Neb. N. G., to Nebraska N. G., Field Hospital No. 1, Fort Riley, for duty.

Col. Guy L. Edie, M. C., is relieved from the further operation of Par. 35, S. O. 296, Dec. 19, 1916, War D.

Lieut.-Col. H. H. Baily, M. C., to Camp Grant, Rockford, Ill., 86th Div., for duty.

The promotion of Major E. B. Vedder, M. C., to be lieutenant-colonel in Medical Corps from May 15, 1917, is announced.

Officers of M. C. to duty as follows: Lieut.-Col. Orville G. Brown to Camp Greene, Charlotte, N. C., 41st Division, as chief surgeon; Major L. O. Tarleton to Tenafly, N. J., for duty as camp sanitary officer during construction of cantonment.

Capt. A. D. Davis, M. C., to Linda Vista, Calif., Camp Kearny, for duty.

First Lieut. Robert H. Wilds, M. C., to Manila for duty.

Orders to Officers of the Sanitary Corps

First Lieut. A. W. Gauger, San. Corps, to Fort Sill, Okla. for duty at the gas school.

First Lieut. H. R. Ralfe, San. Corps, to New York, for duty.

First Lieut. C. Parker, San. Corps, to field medical supply depot, Washington, for duty.

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Atlanta, Ga., for duty, Major E. D. Bondurant, Mobile.

To Camp Kearny, Linda Vista, Calif., for duty Lieut. W. S. Johnson, Notasulga.

To Macon, Ga., Camp Wheeler, for duty as chief of the surgical service, Major Herbert P. Cole, Mobile.

To Syracuse, N. Y., for regimental duty, Lieuts. D. B. Faust, Clayton, and F. H. Craddock, Sylacauga.

ARIZONA

To report by telegraph to commanding general, Southern Department, for duty, Capts. A. L. Tilton, Kingman; W. M. Randolph, Tombstone; Lieuts. T. Watkins, Bisbee; C. B. Wiley, Oldtrails; W. E. McWhirt, Safford, and R. G. Bazell, Winslow.

ARKANSAS

To Fort Ethan Allen, Vt., for duty, with First Vermont Inf., B. G. Lieut. L. M. Lile, Jonesboro.

CALIFORNIA

To American Lake, Wash., for duty, Capts. R. Cadwallader, W. B. Deas, San Francisco; Lieuts. R. M. Jones, Fresno, and E. C. Houston, San Francisco.

To Camp Kearny, Linda Vista, Calif., for duty in the cantonment laboratory, Capt. Robert L. Tebbitt, Los Angeles.

To Linda Vista, Calif., for duty, Lieut. H. S. Keyes, Los Angeles.

To report by telegraph to commanding General, Western Department, for duty, Capt. B. P. Stookey, Lieuts. A. M. Tweedle, Los Angeles, and D. Dwire, San Pedro.

COLORADO

To Denver, Colo., to examine applicants for appointment in the Officers Reserve Corps, Capt. Cuthbert Powell, Denver.

To Fort Douglas, Utah, to make examinations in his specialty, Lieut. Phillip Work, Pueblo.

CONNECTICUT

To Fort Snelling, Minn., and report in person to the commanding officer of that post for duty with the Forty-First Infantry as assistant to the surgeon and by letter to the commanding general, Central Dept., Lieut. Frederick G. Goodridge, Pomfret Center.

To New Haven, Conn., for duty, Lieut. H. S. Arnold, New Haven.

To Rantoul, Ill., and report in person to the commanding officer, Signal Corps Aviation School, for duty as post surgeon and by letter to the commanding general, Central Dept., Capt. Richard Blackmore, Norwich.

DISTRICT OF COLUMBIA

To Syracuse, N. Y., for regimental duty, Lieut. L. H. English, Washington.

FLORIDA

To Anniston, Ala., base hospital as roentgenologist, Lieut. J. D. MacRae, Tampa.

To Atlanta, Ga., Emory University, for duty, Lieut. J. H. Hall, Sopchoppy.

To Baltimore, Md., Phipps Clinic for a six weeks' course of training, Lieut. B. A. Burks, Titusville.

To Fort Sill, Okla., for a course of instruction in gas defense, Lieuts. G. C. Tillman, Gainesville; R. Leffers, Lakeland, and L. J. Efird, Tampa.

To Syracuse, N. Y., for regimental duty, Lieut. J. S. Coker, Gardner.

GEORGIA

To Camp Kearny, Linda Vista, Calif., for duty, Lieut. Charles M. Remsen, Atlanta.

To Montgomery, Ala., for duty, Capt. Y. A. Little, Milledgeville.

To report by telegraph to commanding general, Southern Department, for duty, Lieut. C. R. Bullock, Atlanta.

To Syracuse, N. Y., for regimental duty, Lieuts. O. F. Keen, Brewton; B. H. Clifton, Lyons, and J. F. Arthur, Quitman.

ILLINOIS

To Des Moines, Iowa, for duty, Capt. T. S. Crowe, Chicago.

To Fort Constitution, N. H., Springfield Armory, Mass., for duty, Lieut. W. P. MacCracken, Chicago.

To Fort Riley, for a course of instruction, Lieuts. Frank A. Chapman, Chicago, and Thomas O. Craig, Wheaton.

To Houston, Tex., for duty, Lieut. T. J. Riach, Kankakee.

To Louisville, Ky., Camp Taylor as chief consultant in otolaryngology, Major F. Menge, Chicago.

To Rockford, Ill., for duty as chief consultant in otolaryngology, Capts. Norval H. Pierce, Chicago; for duty, E. W. Fell, Elgin; Lieuts. O. Like, and A. B. Morrill, Chicago.

To report by telegraph to commanding General, Western Department, Capt. T. W. Bath, Bloomington.

To Waco, Tex., for duty, Capt. C. F. Sanborn, Chicago.

INDIANA

To Fort Benjamin Harrison for duty, Lieut. K. C. Eberly, Ft. Wayne.

To Fort McPherson, Ga., for duty, Lieut. M. R. Combs, Terre Haute.

To Houston, Tex., for duty as chief of medical service, Lieut. F. N. Shipp, Indianapolis.

To Rockford, Ill., as chief of the surgical service, Major J. W. Sluss, Indianapolis.

To Spartanburg, S. C., for duty as chief of medical service, Lieut. L. E. Jewett, Wabash.

IOWA

To Baltimore, Md., Phipps Clinic, for a six weeks course of training, Capt. R. G. Eaton, Cherokee.

To Camp Dodge, Des Moines, Ia., for duty, Lieut. R. F. Throckmorton, Derby.

KANSAS

To Ann Arbor, Mich., State Psychopathic Hospital for a six weeks course of training, Lieut. G. E. Hesner, Topeka.

To Camp Pike, Little Rock, Ark., for duty, Lieut. N. A. Seehorn, Hutchinson.

KENTUCKY

To Fort Sill, Okla., for a course of instruction in gas defense, Lieut. J. W. Galvin, Louisville.

To Garden City, N. Y., 26th Division, Nat. Guard, Lieut. W. E. Baxter, Louisville.

To Houston, Tex., for duty, Capt. R. M. Taylor, Naceo.

To Louisville, Ky., for duty, Major M. Board, Louisville; as chief of surgical service, Capt. P. H. Stewart, Paducah; for duty, Lieut. E. Moorman, Harned.

To Syracuse, N. Y., for regimental duty, Lieuts. E. C. Brandon, Elizabethtown; H. T. Alexander, Fulton, and S. B. Casebolt, Pikeville.

To Washington, D. C., for duty, Lieut. O. R. Miller, Louisville.

LOUISIANA

To Fort D. A. Russell, Wyo., to make examinations in his specialty, Lieut. Louis V. J. Lopez, New Orleans.

To Fort Riley, Kan., to make examinations in his specialty, Lieut. Ralph C. P. Truitt, Jackson.

MAINE

To Camp Devens, Ayer, Mass., as chief of the surgical service, Major W. L. Cousins, Portland.

MARYLAND

To Camp Meade, Annapolis Junction, as chief of the surgical service, Capt. A. M. Shipley, Baltimore.

To Fort Oglethorpe and report in person to the commanding officer, medical officers' training camp, for a course of instruction, Lieut. Edward A. Looper, Baltimore.

To Fort Sill, Okla., for a course of instruction in gas defense, Major E. S. Linthicum, Baltimore.

To Garden City, Long Island, N. Y., 42d Division, for duty, Capt. C. H. Conley, Frederick.

To Syracuse, N. Y., for regimental duty, Capt. T. M. Shorkley, Kensington; Lieut. I. M. Zimmerman, Williamsport.

To Washington, D. C., Major T. C. Janeway, Baltimore.

MASSACHUSETTS

To Allentown, Pa., for duty, Lieut. Otho L. Schofield, Newton.

To Anniston, Ala., for duty, Lieut. H. Caro, Palmer.

To Ayer, Mass., for duty, Capt. D. A. Thom, Worcester.

To Boston, Mass., Boston Psychopathic Hospital for a six weeks' course of training, Lieuts. E. H. French, and H. R. Viets, Boston.

To Camp Devens, Ayer, Mass., for duty, Capts. J. H. Wright, Brookline, and J. Y. May, Worcester.

To Charlotte, N. C., for duty, Lieut. A. P. Chronquest, Hathorne.

To Chillicothe, O., for duty, Capt. H. L. Stick, Baldwinville.

To Fort Leavenworth, Kan., for temporary duty making neurologic and psychopathic examinations of the Seventh Regiment of Engineers, Lieut. Ralph M. Chambers, Westboro.

To Fort Sam Houston, Tex., for duty, Lieut. G. A. MacIver, Boston.

To Fort Sill, Okla., to make examinations in his specialty, Lieut. John J. Stack, Boston.

MICHIGAN

To Alexandria, La., for duty, Capt. J. T. Sample, Saginaw.

To Ann Arbor, Mich., State Psychopathic Hospital, for a six weeks' course of training, Lieut. R. S. Morrish, Flint.

To Battle Creek, Mich., for duty, Lieuts. A. F. Jennings, and H. O. McMahon, Detroit.

To Fort Riley, for a course of instruction, Lieut. David Littlejohn, Bridgman.

To Fort Sill, Okla., for duty, Capt. Carey P. McCord, Detroit.

To proceed to his home and report by telegraph to the A. G. of Army, Capt. F. S. Love, West Branch.

MISSISSIPPI

To Little Rock, Ark., for duty, Lieut. R. T. O'Neil, Vicksburg.

To Syracuse, N. Y., for regimental duty, Capts. B. J. Marshall, Agricultural College; J. T. Barbee, Ripley; Lieuts. V. N. Nichols, Carson; T. J. Bush, Clarksdale; V. H. Bean, Smithville, and Z. C. Hagan, Union.

MISSOURI

To Camp Custer, Battle Creek, Mich., as chief of the surgical service, Major W. J. Frick, Kansas City.

To Camp Meade, Annapolis Junction, Md., as assistant to chief of the medical service in the care of cardiovascular cases, Lieut. A. E. Strauss, St. Louis.

To Des Moines, Ia., for duty, Lieut. D. E. Singleton, Clarence.

To Fort Benjamin Harrison, for duty, Lieut. J. C. Edwards, O'Fallon.

To Fort Riley, for duty, Lieut. Samuel R. Johnson, St. Charles.

To Linda Vista, Calif., for duty, Lieut. C. L. Woolsey, Chillicothe.

To Mount Clemens, Mich., Flying School, for duty, Lieut. F. E. Woodruff, St. Louis.

To Washington, D. C., for duty, Major J. F. Binnie, Kansas City; for duty in connection with the brain section of surgery of the head, Major G. Seelig, St. Louis.

NEBRASKA

To Baltimore, Md., Phipps Clinic for a six weeks' course, Lieut. P. A. Royal, Lincoln.

NEVADA

To Fort Leavenworth, Kan., and report in person to the commanding officer of that post for duty with the Seventh Engineers as assistant to the surgeon and by letter to the commanding general Central Department, Lieut. Delos A. Turner, Goldfield.

NEW HAMPSHIRE

To Atlanta, Ga., for duty, Lieut. H. W. Cleasby, Lancaster.

NEW JERSEY

To Camp Sheridan, Montgomery, Ala., for duty as roentgenologist, Lieut. J. L. Gariss, Trenton.

To Camp Sherman, Chillicothe, O., Lieut. H. I. Gosline, Trenton.

To Fort Des Moines, Ia., for duty, Lieut. E. A. Draper, Cape May.

To Fort Sill, Okla., for a course of instruction in gas defense, Lieuts. F. B. Gilpin, Cranford; and P. Du B. Bunting, Elizabeth.

To Greenville, S. C., for duty, Lieut. J. F. Wallis, Pleasantville.

To Wrightstown, N. J., for duty, Major H. A. Cotton, Trenton; for duty in charge of division of otolaryngology, section of surgery of the head, Capt. W. P. Eagleton, Newark.

NEW YORK

To Albany Hospital and Medical College, Albany, N. Y., for recruiting Base Hospital No. 33, Capt. J. F. Southwell, Albany.

To Annapolis Junction, for duty, Capt. M. W. Rayner, New York City.

To Anniston, Ala., for duty, Lieut. E. P. Boas, New York City.

To Camp Beauregard, Alexandria, La., for duty, Lieut. M. Maslon, Glens Falls.

To Camp Dix, Wrightstown, N. J., for duty, as chief of the surgical service, Capt. H. D. Collins, New York City.

To Columbia, S. C., for duty, Capt. R. H. Hutchings, Ogdensburg; Lieut. F. C. Robbins, Hornell.

To Des Moines, Ia., for duty, Lieut. Henry M. Larson, New York City.

To Fort Benjamin Harrison for duty, Capt. G. P. Coopernail, Bedford.

To Fort Ethan Allen, Vt., for duty, Lieuts. G. W. Timmers, Castleton; and C. W. Many, Florida.

To Fort Leavenworth, Kan., and report in person to the commanding officer, department laboratory for duty and by letter to the commanding general, Central Dept., Lieut. David M. Kaplan, New York City.

To Fort Sill, Okla., Camp Doniphan, for duty, Lieut. L. H. Nahum, New York City.

To Fort Snelling, Minn., and report in person to the commanding officer of that post for duty with the Forty-first infantry as assistant to the surgeon and by letter to the commanding general, Central Dept., Lieut. Joseph H. Benttie, Dobbs Ferry.

To Garden City, Long Island, N. Y., 42d Division, for duty, Lieut. M. Freiberger, New York City.

To Greenville, S. C., for duty, Lieut. F. M. Shockley, Brooklyn.

To Hattiesburg, Miss., for duty, Lieut. R. F. Zimmerman, Elmhurst.

To Little Rock, Ark., for duty, Capt. G. B. Campbell, Utica; and Lieut. C. L. Sicard, Amsterdam.

To Petersburg, Va., for duty Capts. James B. Clark, New York City; and J. M. W. Scott, Schenectady.

To Rantoul, Ill., and report in person to the commanding officer, Signal Corps Aviation School, for duty as medical member of the examining board, Aviation Section, Signal Corps, and by letter to the commanding general, Central Dept., Lieut. Conrad Berens, Jr., New York City.

To report by telegraph to the commanding general Eastern Department, for assignment to duty, Lieut. John B. Byrne, Jr., Brooklyn.

To report by telegraph to commanding general Southern Dept., for duty, Lieut. L. J. Stahl, Flushing.

To Syracuse, N. Y., for regimental duty, Lieuts. S. S. Piper, Elmira; W. E. Boyce, Yonkers.

To Washington Barracks, D. C., to make examinations in his specialty, Lieut. Edward L. Hanes, Rochester.

To Wrightstown, N. J., for duty, Lieut. L. M. Wilbur, Jasper.

To Yaphank, Long Island, N. Y., for duty, Maior G. M. Hammond, New York City; and Capt. A. J. Rosanoff, Kings Park.

NORTH CAROLINA

To Fort Ethan Allen, Vt., for duty, Capt. W. Allan, Charlotte.

To Macon, Ga., for duty, Lieut. A. S. Pendleton, Raleigh.

To Newport News, Va., and report in person to the commanding officer, port of embarkation, for duty, Capt. James E. Stokes, Salisbury.

OHIO

To Battle Creek, Mich., for duty, Capt. F. D. Ferneau, Toledo.

To Fort Riley, for a course of instruction, Lieut. Myron Hanna, Scott.

To Fort Worth, Tex., for duty, Lieut. V. R. Small, Columbus.

To New York, N. Y., Neurological Institute for a six weeks' course of training, Lieut. W. M. Blaine, Youngstown.

OKLAHOMA

To Fort Riley, for a course of instruction, Lieut. Paul R. Siberts, Cooperton.

To Fort Sam Houston, Tex., for duty, Lieut. D. A. Gregory, Ardmore.

To report by telegraph to commanding general, Southern Department, for duty, Lieut. Burton Fain, Frederick.

OREGON

To Fort Leavenworth, Kan., and report in person to the commanding officer of that post for duty with the Seventh Engineers as assistant to the surgeon and by letter to the commanding general Central Dept., Lieut. Philip J. Keizer, North Bend.

PENNSYLVANIA

To Allentown, Pa., and report in person to Major Elbert E. Parsons for duty and by letter to the commanding general, Eastern Department, Lieut. Dwight E. Long, Freeburg; for duty with Base Hospital No. 27, Lieuts. H. G. Clarke, Bridgeville, and E. W. Fiske, Pittsburgh.

To American Lake, Wash., for duty, Lieut. R. P. Smith, Fort Louden.

To Annapolis Junction, Md., for duty, Lieut. C. A. Patten, Philadelphia.

To Ann Arbor, Mich., State Psychopathic Hospital, for a six weeks' course of training, Lieut. E. H. Erney, Philadelphia.

To Augusta, Ga., for duty, Lieut. E. A. Stracker, Philadelphia.

To Belleville, Ill., and report in person to the commanding officer for duty as medical member of the examining board, Signal Corps Aviation School, and by letter to the commanding general, Central Department, Capt. Walter S. Cornell, Philadelphia.

To Camp Eldridge Laguna for duty, Lieut. B. F. Fridge, Jr., Manila.

To Camp Funston, Fort Riley, Kan., for duty in the cantonment laboratory, Lieut. Russell Richardson, Newtown.

To Canal Zone for duty, Lieut. P. A. Trau, Philadelphia.

To Deming, N. M., for duty, Lieut. H. Phillips, Philadelphia.

To Fort Ethan Allen, Vt., for duty, Lieut. C. W. Lincoln, Wayne.

To Fort Monroe, Va., for duty, Lieut. W. J. Lynch, Philadelphia.

To Fort Niagara, N. Y., for duty, Lieut. A. A. Eshner, Philadelphia.

To Fort Sam Houston, Texas, for duty, Major J. H. W. Rheim, Philadelphia.

To Fort Sill, Okla., for a course of instruction in gas defense, Lieuts. C. B. Farr and Jo Leidy, Philadelphia.

To Fort Snelling, Minn., and report in person to the commanding officer of that post for duty with the Forty-First Infantry as assistant to the surgeon and by letter to the commanding general, Central Department, Lieut. Cheney M. Stimson, Philadelphia.

To Garden City, N. Y., Forty-Second Division, for duty, Lieuts. P. M. Tibbins, Beech Creek; R. L. Stackpole, Butler; F. O. Batteiger, Greenville; W. F. Satchell, Saxton; A. M. O'Brien, Sharon; E. Storer, W. Windfield and F. C. Katherman, Whitney.

To Petersburg, Va., for duty in charge of division of otolaryngology, section of surgery of the head, Capt. E. W. Day, Fittsburgh.

To Pittsburgh, for enlisting personnel of Red Cross Hospital Unit L., Capt. R. V. Robinson, Pittsburgh.

To report by telegraph to commanding general, Southern Department, for duty, Lieut. F. Brady, Philadelphia.

To Spartanburg, S. C., for duty, Lieut. S. Leopold, Philadelphia.

To Sunbury, Pa., Twenty-Eighth Division, Pa. N. G., for duty with First Engineers, Lieut. B. H. E. W. Locke, Philadelphia.

To Syracuse, N. Y., for regimental duty, Capt. E. E. W. Given, Philadelphia; Lieuts. J. C. Kochczyski, Hazleton; F. W. Knippel, Mercer; C. D. Bradley, Philadelphia, and R. H. Murdock, Wilkes-Barre.

PHILIPPINE ISLANDS

To Camp McGrath, Batangas, for duty, Lieut. Thomas C. Walker, Manila.

To Camp Stotsenberg, Pampanga, for duty, Lieut. H. W. Kennard, Manila.

RHODE ISLAND

To Chillicothe, Ohio, for duty, Lieut. H. P. B. Jordan, Providence.

SOUTH CAROLINA

To Fort Sill, Okla., for a course of instruction in gas defense, Lieut. L. Petera, Columbia.

SOUTH DAKOTA

To Fort Riley, for a course of instruction, Lieut. Harry C. Parsons, Watertown.

TENNESSEE

To Fort Des Moines, Iowa, for duty, Lieut. C. M. Gloster, Brownsville.

To Fort Oglethorpe, for training with Hospital Unit P., Major William B. Malone, Memphis.

To Fort Riley, for a course of instruction, Lieut. Polk D. Brown, Irving College.

To Fort Sill, Okla., for a course of instruction in gas defense, Capt. L. A. Stone, Memphis.

To Syracuse, N. Y., for regimental duty, Lieut. T. B. Givan, Nashville.

TEXAS

To Fort Riley, for a course of instruction, Lieut. Arthur W. C. Bergfeld, Seguin.

To Petersburg, Va., for duty, Lieut. R. L. Davis, Big Springs.

To report by telegraph to commanding general, Southern Department, for duty, Capts. R. D. Gist, Amarillo; G. H. Garrett, Del Rio; J. M. O'Farrell, Richmond; J. M. Bannister, Snyder; Lieuts. J. H. Walker, Alvard; J. D. Motheral, Angleton; F. E. Hudson, Anson; C. H. Tindall, Appleby; W. E. Watt, Austin; C. L. Monk, Austwell; O. E. Egbert, Beeville; L. F. Putnam, Blessing; M. L. Fuller, Bradshaw; W. F. Chambers, Bronte; W. C. Weir, Buckholts; A. J. Evans, Caddo; D. M. Speer, Celina; M. M. Risinger, Chalk Mt.; W. A. Warner, Claude; J. M. Trible, Cuero; J. H. Erwin, Dallas; M. M. Morrison, Denison; E. W. Breihan, Denton; V. V. Clark, Estelline; H. F. Wilkins, Fort Worth; B. F. Smith, Jr., Galveston; J. C. Dobbs, Ganado; D. F. Gray and G. Miller, Gause; W. T. Daws and J. A. Maness, Gonzales; M. L. Stricklin, Gustine; F. W. Carruthers, Hillsboro; W. N. Shaw, Houston; H. L. D. Jenkins, Hughes Springs; G. L. Langworthy, Lakeview; O. P. Goodwin, Lamasco; N. C. Boethel, Leroy; A. Nowlin, Liberty Hall; O. A. Smith, Mansfield; R. L. Hamilton, Matador; H. E. Luchrs, Mathis; R. E. Pridgen, Oakland; L. A. Dix, Otto; J. W. Harrison, Palacios; G. W. Wilhite, Palestine; W. A. Jennings, Park Spring; H. A. White, Raymondville; R. R. Allen, Roby; A. G. Neighbor, Rosenberg; W. M. Johnson, Rosston; R. A. Olive, San Angelo; W. J. Vinsant, San Benito; D. R. Aves, Seabrook; R. W. Horton, Smiley; H. W. Gough and R. L. Kimmins, Temple; J. J. Livingston, Tyler; E. Toomim, Waco; O. P. Sweatt, Waxahachie, and D. L. Sanders, Wills Point.

To report in person to commanding general, Southern Department, for duty, Lieut. W. T. Harris, San Antonio.

VIRGINIA

To Camp Lee, Petersburg, Va., for duty as chief of the surgical service, Lieut. W. L. Peple, Richmond.

To Fort Riley, Kan., for duty, Lieut. H. J. Hayes, Richmond.

To Fort Sill, Okla., for a course of instruction in gas defense, Lieut. J. B. Halligan, Petersburg.

To Sunbury, Pa., Twenty-Eighth Division, P. N. G., for duty with First Engineers, Lieut. C. M. Thomas, Healing Springs.

To Syracuse, N. Y., for regimental duty, Lieuts. B. R. Caldwell, Newcastle, and B. B. Dutton, Winchester.

WASHINGTON

To report by telegraph to commanding general, Southern Department, for duty, Major R. W. Newton, Fort George Wright.

WEST VIRGINIA

To Syracuse, N. Y., for regimental duty, Lieuts. H. W. Daniels, Elkins; R. L. Eltinge, Sterling.

WISCONSIN

To Alexandria, La., Base Hospital as a roentgenologist, Lieut. C. H. Nims, Oshkosh.

To Syracuse, N. Y., for regimental duty, Lieut. S. J. Lewis, Milwaukee.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Lane Lectures.—The sixteenth course of Lane medical lectures will be delivered by Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research, on the evenings of October 8, 9, 10, 11 and 12, at 8:15, in Lane Hall, Stanford University Medical School, San Francisco. The medical profession and students of medicine are cordially invited to attend. The titles of the lectures to be given by Dr. Flexner are as follows:

PHYSICAL BASIS AND PRESENT STATUS OF SPECIFIC SERUM AND DRUG THERAPY

October 8: "Epidemic Meningitis; Lobar Pneumonia; Bacillary Dysentery and Specificity in Bactericidal Serums."
October 9: "Gaseous Gangrene; Shiga Bacillary Dysentery, and the Principles of Homoserum Therapy."
October 10: "Poliomyelitis and the Principles of Homoserum Therapy."
October 11: "Local Specific Therapy as Illustrated by the Serum Treatment of Epidemic Meningitis, Poliomyelitis and Tetanus."
October 12: "Chemotherapy of the Spirochetal Infections."

ILLINOIS

Personal.—Dr. Ralph T. Hinton, who was appointed superintendent of the Elgin Hospital for the Insane, assumed his duties, September 6. He succeeded Dr. Henry J. Gahagan.

Chicago

Held for Selling Morphin.—Sylvan Sommers, recently said to have been a lieutenant in Ambulance Company No. 1 of the Illinois National Guard, and claiming to be a physician, has been arrested and turned over to United States authorities on the charge of selling habit-forming drugs. Investigation showed that he is not a physician.

Annual Meeting of Railway Surgeons.—The annual meeting of the "Soo" Surgical Association will be held in Chicago, Oct. 22 and 23, 1917, the first two days of the meeting of the Clinical Congress of Surgeons of North America. The meeting will be clinical in character, and various sessions will be held in hospitals and other institutions in the city.

Shortage of Instructors in Medical College.—Twenty-five instructors from the Medical School of the University of Illinois, Chicago, have entered the medical service of the United States Army. This shortage may compel the shortening of the curriculum. President Edmond J. James of the university anticipates a decrease of 35 per cent. in the attendance at the school this fall.

Personal.—Dr. Sidney I. Kornhauser, assistant professor of zoology in Northwestern University, recently delivered an address on "Sex Determination and the Nature of Secondary Sectional Characteristics" at a meeting of the faculty and students of the Graduate Summer Quarter in Medicine of the University of Illinois. At the same meeting Dr. Ruben M. Strong, associate professor of anatomy, Vanderbilt University, made an address on "Adaptation in Bone Architecture," Dr. Orville H. Brown, Phoenix, Ariz., delivered an address on "Asthma," and Dr. Addison Gulick, assistant professor of physiology in the University of Missouri, made an address on "Overfeeding and the Calorie Problem in Human Metabolism."——Dr. Charles M. McKenna, who has been ill for the past two months following a Roentgen-ray burn, was recently operated on and is now convalescent.

IOWA

Schools Closed.—The schools of Davenport were all closed on September 7 on account of infantile paralysis. Children under 16 years of age have been forbidden to enter motion picture theaters, and attendance at church and Sunday school has been prohibited. One case of infantile paralysis has been reported from Rockingham.

Personal.—Dr. Charles F. Read, superintendent of the Watertown Hospital, has been made superintendent of the Insane Hospital at Dunning, Ill.——Drs. Thomas F. Neil and Thomas J. Riach, interns at the Watertown Hospital, have entered the Hospital Corps of the Army.——Dr. George W. Yavorsky, Belle Plaine, captain in the Medical Reserve Corps, has been ordered to Fort Benjamin Harrison.

MARYLAND

For Prevention of Diphtheria.—In order to prevent the spreading of diphtheria in the schools, Health Commissioner Blake has begun making cultures from all children who have had this disease since July 1. Until now he has discovered three carriers of the disease who will be excluded from the schools until their carrying powers have become negative. The commissioner is also making tests of those who have had scarlet fever, to determine whether traces of the disease are still in their systems.

Personal.—Dr. William Wirt Eichelberger has received a commission as captain in the Medical Reserve Corps, and has been selected by the National Committee on Mental Hygiene to help form a unit of neurologists and psychiatrists in the country. Dr. Eichelberger is a graduate of the University of Maryland.——Dr. Harry F. Shipley, a physician of Granite, and the health officer of the Second District of Baltimore County, was seriously injured recently when his automobile turned turtle with him. Dr. Shipley's collar bone was broken, his nose lacerated, and he was badly bruised about the body. He was unconscious when picked up, but recovered after being taken to the hospital.——Dr. P. Hamilton Lloyd, Ridge, is at Mercy Hospital, where he will undergo an operation for stomach trouble.

Campaign to Fight Tuberculosis.—Preparations for an intensive campaign to prevent the spread of tuberculosis in the American Army and among those rejected by the draft will be the theme of the North Atlantic Sectional Conference of the National Association for the Study and Prevention of Tuberculosis, to be held in Baltimore, October 17 and 18. Final details will also be discussed for carrying on the Red Cross Christmas Seal campaign, from which it is hoped to raise the $3,000,000 necessary for this war work. How to provide adequate care for the thousands of men who will be rejected from the Army because of tuberculosis or suspected tuberculosis, or who will be discharged because of this disease before the new Army is sent overseas or after it is in France, will form the burden of the conference discussion. This conference is one of six that will be held this fall in various parts of the United States.

MASSACHUSETTS

To Admit Women Pupils.—For the first time in its history, Harvard University Medical School will open its doors to women. This is on account of the heavy draft by the war on the medical profession, and it is thought desirable to encourage women to take up the study of medicine.

Meeting of Health Officers.—The first annual State Convocation and School of Instruction for Massachusetts Health Officials took place, September 4-7. Meetings were held at the Massachusetts Institute of Technology and at the medical schools and hospitals in Boston. The papers presented dealt with subjects of interest to physicians, health officers and nurses. It is intended to have this an annual affair, and to promote greater interest and attendance, perhaps by allowing traveling expenses to attending health officials, as is said to be done in other states. Dr. T. F. Harrington of the state board of health said that in 1916 in Massachusetts there occurred twenty-seven cases of anthrax and four deaths; up to September 1 of this year there had been thirty cases and six deaths. This was due to the fact that owing to the war and the increased demand, hides which formerly went to England from India and Africa now come to this country. The hides in many cases are not properly sterilized (sun dried) and U. S. consuls' reports as to the condition of the hides shipped are lost or delayed. In England where they have a board of anthrax control the total number of anthrax cases reported reached thirty in a year before the war. Anthrax is a disease that occurs in animals. The animal on being slaughtered sheds its blood on its horns, hide, hair, etc. The spores, as is known, are very resistant. The disease occurs from handling these animal products not properly sterilized. In all cases investigate the occupation. For treatment, in one hospital where they practiced excision of the pustule they had a mortality of 100 per cent., all the patients dying from septicemia. At the Massachusetts General Hospital they are using the sustaining treatment, and with better results. One patient at North Adams was treated by some serum of Italian manufacture, with recovery. The first case that occurred in Boston was in a man picked up on the street, who died in six hours. The newspapers reported that he died of arsenic poisoning from handling leather; at the Relief Hospital it was said the man died from concussion of the brain. The necropsy showed that the man had pulmonary

edema (edematous form of anthrax). All cases of anthrax are proved by diagnostic methods and injection of guinea-pigs. Dr. Harrington also spoke of the necessity of reporting births in order to provide certificates for enforcing and regulating the child labor laws, and of the importance in recording all stillbirths to note the occupation of the mother; lead poisoning was to be noted in this connection.

MICHIGAN

Licenses Stolen.—Dr. L. N. Host, Detroit, reports that a number of valuable papers were stolen from his office, including his licenses to practice medicine in Wisconsin and in Michigan. Secretaries of state licensing boards are requested to be on the lookout for these licenses. The Wisconsin license was issued in 1915, the Michigan license in 1916.

NEW YORK

Paralysis Up-State.—Eleven cases of infantile paralysis have been reported recently from Colton, St. Lawrence County. The schools are closed, and children are barred from public gatherings.

Personal.—Dr. Lewis Shalet has resigned as general and medical superintendent of the Montefiore Home Country Sanatorium at Bedford Hills. He will locate at West New York, N. J.——Bernon Prentice and Joseph Swann, both of New York, have been appointed to serve as deputy commissioners to Major Murphy, Red Cross commissioner to Europe.

Examination for Superintendent.—A competitive civil service examination will be held, October 6, in New York state for the position of superintendent of the Iola Tuberculosis Sanatorium in Monroe County. The position pays $4,000 a year. Applicants must be licensed physicians of New York state, but need not reside in the state. Application blanks may be had from the State Civil Service Commission, Albany.

Distribution of Pasteurized Milk.—The milk stations provided by Nathan Straus in New York City were closed for the season, September 9, after having distributed 2,067,726 bottles and 1,296,021 glasses of pasteurized milk during the previous twelve months. During the twenty-five years Mr. Straus has been interested in this work, 44,940,907 bottles and 25,305,519 glasses of pasteurized milk were distributed from the infant milk depots maintained in the city.

Meeting on Neurologic Surgery.—A meeting at which will be presented a symposium on neurologic surgery will be held in New York Polyclinic Hospital, October 1, at 8:15 p. m., by the Department of Neurologic Surgery. The following subjects will be presented:

"Diagnostic Value of Lumbar Puncture," Dr. Young C. Lott.
"Observations Regarding the Anesthesia in Cerebral Surgery," Dr. Charles S. Hunt.
"The Appearance of the Fundus Oculi in Certain Intracranial Conditions," Dr. James A. Kearney.
"Presentation of Patients Operated on for Various Intracranial Spinal Peripheral Nerve Lesions," Dr. William Sharpe.
"Psychopathology," Dr. Edward S. Cowles.
"The Treatment of Hypoplastic and Mentally Impaired Children," Dr. E. Bosworth McCready.

New York City

Ambulance Donated to Red Cross.—The parishoners of St. George Church, Stuyvesant Square, have given the Red Cross an ambulance which is to be sent to France soon. An effort is being made to arouse the interest of all the Episcopal churches of the city in a fund for the purpose of sending army kitchen trailers to France.

Held for Selling Habit-Forming Drugs.—Daniel J. Hoyt, lieutenant in the United States Army, M. R. C., September 8, was held in $1,500 bond on the charge of selling habit-forming drugs. The arrest was made following a raid on his private sanatorium. Hoyt was in service at Fort Riley, Kan., and was brought to New York for trial.

Drug Sellers Sentenced.—Federal officials who have been conducting a campaign against the illicit traffic in habit-forming drugs recently secured the conviction of three men, who were sentenced to prison for two years each, and of two boys, who were sent to the Elmira Reformatory for terms of eighteen and thirteen months, respectively.

Change in Management of Sanatorium.—Dr. R. W. Adkins has become medical director of the Orchard Springs Sanatorium at Dayton, succeeding Dr. J. C. George. The sanatorium is now run by an incorporated company. Dr. K. F. Shephard, the former owner, remains as president of the board of directors, and consulting psychiatrist.

Refuse Incorporation to "Golden Cross."—For the second time the petition for the incorporation of the "Golden Cross," organized to aid soldiers injured in the American Army and Navy and aeronautical service has been denied. In July, Judge Ordway denied a similar petition on the ground that the proposed sphere of activities is adequately covered by the Red Cross. The petition just recently denied says that the organization does not propose to establish a hospital or furnish medical treatment, but only to provide accommodation for those discharged from medical treatment who need rest and aid during convalescence. It is stated by the proposed founders that they did not intend to conflict with the Red Cross, but merely to cooperate, and give sole attention to the aeronautical branch of the service.

PENNSYLVANIA

Infantile Paralysis During August.—Dr. Samuel Gibson Dixon, state commissioner of health, September 7, announced that there had been 107 cases of infantile paralysis in the state in August, but only one district with a serious condition, that at Newcastle. Lawrence County had thirty cases reported, with twenty-one from Lancaster. Dr. Dixon points out that centers of infection for August have been largely those which escaped easiest in the epidemics of 1910 and 1916. Those in the eastern end of the state have been virtually all in rural districts and scattered, whereas last year the cases were mostly concentrated in cities.

Philadelphia

Red Cross Carnival.—A Red Cross carnival to raise $1,000 for Base Hospital No. 20, organized at the Jefferson Hospital, was held by the Fifty-Sixth Street Fourth of July Association, September 14.

City Pays for Hospital.—The city cleared off its indebtedness for taking by condemnation the buildings of the Medico-Chirurgical Hospital, by paying to the trustees of the University of Pennsylvania, September 14, $1,047,372.58.

Municipal Appointments.—Director Wilmer Krusen, September 14, appointed to the position of assistant medical school inspector at $600 a year each, Drs. Charles Salon Wachs, Benjamin Harrison Shuster, William D. Barry and Jacob Moses Cahan.

Navy Base Hospital on Duty.—Members of Naval Base Hospital No. 3 have been ordered to report to the Navy Yard for duty. Miss Alice M. Garrett, chief nurse, said that she had not received further instruction, but that members of the staff are looking forward to orders to proceed to France. The staff was recruited at the Methodist Hospital. Major Elijah Hillingsworth Siter said that no further base hospitals will be supplied from Philadelphia hospitals.

Personal.—Dr. John Wanamaker III, one of the veterans of the city's police surgeons in point of service, on September 13 sent his resignation to Dr. Hubley Raborg Owen, chief of police surgeons. The resignation is effective, October 15. He was appointed a police surgeon in 1904, and for a time was attached to the old ninth district station. During the past ten years he has been detailed at the city hall cell room. For a time Dr. Wanamaker was acting chief surgeon.

WISCONSIN

Personal.—Dr. Samuel Kline, formerly professor of histology and embryology at Fordham Medical School, has been appointed assistant superintendent at the Waldheim Park Sanatorium, Oconomowoc.

Graduate Medical Instruction at Home.—The State Medical Society of Wisconsin has arranged a course of lectures, clinics and laboratory instructions to be given under the extension division of the University of Wisconsin. The course will extend over three weeks, and is being given in Fond du Lac on Mondays and Tuesdays, in Oskosh on Wednesdays and Tuesdays, and in Appleton on Fridays and Saturdays. The subject of the course is the "Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs." The fee for the course is $5. The local hospitals are cooperating.

GENERAL

The Quality of American-Made Synthetics.—The Council on Pharmacy and Chemistry, with the aid of the American Medical Association Chemical Laboratory, announces through the secretary, Prof. W. A. Puckner, that it proposes to make a study of the quality of American-made synthetics. It will examine specimens of important, unofficial synthetic drugs submitted by their manufacturers and later, when these drugs are offered for sale, purchase them on the open market and

report on their purity. The Council also offers to examine specimens of American-made synthetics when submitted by dealers, providing the origin of such specimens is established.

This control of synthetic drugs which, as the result of the war are now made in this country, is believed to be in the interest of American industry, for the protection of the public, and to the satisfaction of physicians. Since the manufacture of some of the synthetic drugs is to some extent experimental in this country, it is due physicians and the public that they be given the protection which will come from the proposed investigation of the market supply. In undertaking this investigation, the Council feels confident that the responsible manufacturer will welcome this check as the best way of establishing complete confidence in his product.

FOREIGN

From Havana.—Dr. T. V. Coronado has been appointed professor of hygiene and legal medicine at the University of Havana, to succeed the late Prof. L. M. Cowley.——Dr. F. M. Capote, president of the Colegio Medico de Cuba, has been appointed secretary of the national public health and hospital service, in place of the late Prof. R. Menocal.

Deaths in the Profession Abroad.—E. Rimini, professor of materia medica at the University of Pavia and author of works on chemistry. He lost his life in a railroad accident. ——**Manouvriez** of Paris, noted for his pioneer work in the protection of miners.——**Malgat** of Nice.——**C. B. Rendle** of London, aged 82.——**J. B. Fisher,** Liverpool, aged 60.——**Pasanis** of Madrid, whose last work was recently summarized in THE JOURNAL, page 763. The Italian casualty lists for the last month bear the names of Lieuts. **G. Auletta, C. Bergonzolo, M. Bianchi, P. Cavatorti, A. Rossi, A. Dogliotti, L. Salerno** and **P. Sartorio.** Also Col. **C. Carratu** and Capt. **A. C. Tamponi.** The British casualty lists include Capts. **J. C. Harris, J. B. Rawlins, H. D. Eccles, H. Y. C. Taylor, A. Traill, C. Weller, R. A. Bostock, H. K. Sewell,** aged 32; **H. Ackroyd,** aged 40; **F. R. Armitage,** aged 34; Lieut.-Col. **F. D. Blandy;** Lieut. **C. M. Atkinson;** Major **E. F. B. Wilson,** aged 57, from South Africa; Capt. **D. Arthur,** aged 32, who died while a prisoner in Turkey, and Lieut.-Col. **H. A. de Latour,** aged 68, from New Zealand.

PARIS LETTER

PARIS, Aug. 23, 1917.

The War

DRY WOUNDS OF THE ARTERIES

Dr. André Martin reported recently to the Réunion médico-chirurgicale de la IIIe Armée eleven observations of "dry" wounds, so called, comprising the following cases: humeral artery (four cases), radial arteries and veins (one case), ulnar artery (two cases), anterior tibial artery (one case), and posterior tibial artery (one case). After calling attention to the fact that these conditions have been well known since Fiolle of Marseilles published the results of his investigations, he pointed out that these wounds are seen in lesions caused by bursting shells (even shrapnel), and in so-called setons. Clinically there is no symptom that will permit one to establish a diagnosis. Roentgenoscopy and an examination of the visible path of the projectile do not always lead to a correct diagnosis; nor can one base one's judgment entirely on the condition of the pulse below the lesion, as to whether obliterated, diminished or normal. The pain localized in the seat of the vascular wound is a symptom of no value. As to the anatomicopathologic condition, in all the cases in which the vessel was completely severed, a part of the artery had been destroyed by charring; rétraction of the proximal end had taken place, with formation of clot, extending upward for a variable distance; there was occasional absence of pulsation, and only a slight clot, or none at all, could be observed at the point of section. The vascular tunics were contused and ecchymotic (histologic examination). The distal end presented a frayed appearance, but there were no clots, except in one instance. To sum up, there were no clots, external hemorrhage or hematoma; that is, such is the typical condition. The effect of the dry vascular wounds is often extended to the nerves and the veins. The surrounding muscle lesions are of the common type, but certain forms of gas gangrene are less likely to develop, owing to the favoring nature of the vascular dry wound. The evolution of these wounds would have been aggravated by a secondary hemorrhage or an arterial hematoma. To be sure, with the exception of four cases of wounds of the humeral artery, it was only a question of lesions affecting mediocre vessels, but these traumatisms, since the consequences may be grave, deserve careful attention. When the excision is made, one ought, in fact, to examine and verify the condition of the cluster of blood vessels, even if it is an insignificant looking wound of benign aspect, for there is much truth in the saying that there are no small war wounds.

DISAPPEARANCE OF SMALLPOX FROM PARIS

At the last meeting of the Conseil d'hygiène publique et de salubrité of the department of the Seine, Dr. Roux, director of the Institut Pasteur, read a very interesting report on the administration of vaccine in Paris in 1916. He called attention to the fact that the 800,000 vaccinations performed at the beginning of the war and during the year 1915 on the resident population of Paris have resulted in the disappearance of smallpox. In spite of the extraordinary shifting of the population due to the mobilization, and in spite of the fact that Paris offered a refuge to a considerable number of emigrants from invaded countries, the capital has remained exempt from smallpox. However, all the conditions favorable to the incubation of this disease were realized in the agglomerate mass of emigrants, depressed in spirit and in body, as they were, the greater part of whom had not been recently revaccinated, and many of whom had never been inoculated at all. On several occasions variolar infection has been introduced from outside without its becoming the focus of an epidemic. A prolonged war without smallpox is a remarkable fact. It proves the efficacy of the prophylactic measures that have been taken. The honor for this result belongs to the city of Paris and its vaccine service. The people of the city who have eagerly complied with the repeated appeals that the administration has made by means of posters and of advertisements in the press are also to be commended.

In 1916, a single case of smallpox was discovered in Paris. It was a case imported from Algiers. The patient, an Arabian, who had not been vaccinated in childhood, arrived in Paris during the period of incubation. He was placed in the Claude Bernard Hospital and died there. This Arabian was working in a factory employing 1,000 workmen and was living with his brother. His fellow workmen and his brother were vaccinated immediately after the case was discovered, and no other case developed from it.

Death of Dr. Charles Livon

Dr. Charles Livon, director of the Ecole de médecine at Marseilles, died recently, aged 67. Dr. Livon founded at Marseilles in 1893 the Institut antirabique. Since the beginning of the war he had been director of the auxiliary hospital of the Hôtel Dieu at Marseilles.

Marriages

CAPT. DANIEL MARSH SHEWBROOKS, M. R. C., U. S. Army, to Miss Margaret F. Sheldon, Middlebury, Vt., at Kansas City, September 1.

WILLIAM ROBBINS WHITE, M.D., Providence, R. I., to Miss Margaret L. Wardle of Troy, N. Y., at Ferrisburg, Vt., August 28.

LIEUT. CHARLES HENRY LAWS, M. R. C., U. S. Army, Elkins, W. Va., to Mrs. Lula Slaughter Booker of New York, July 26.

ASST. SURG. ARTHUR CLARK DEAN, U. S. Navy, to Miss Minnie M. Snyder, both of Philadelphia, August 29.

ASST. SURG. THOMAS V. MURTO, U. S. Navy, to Miss Elizabeth Ferguson of Norfolk, Va., August 25.

ROBERT LYLE MOTLEY, M.D., to Miss Celia Mary Calcutt, both of Dyersburg, Tenn., August 29.

MERITT CARLTON VAUGHAN, M.D., to Miss Ann Elsie Steger, both of Buffalo, recently.

PATRICK JOSEPH HAMILL, M.D., to Miss Mary Kenny, both of Jersey City, N. J., August 27.

VICTOR HUGO LINDLAHR, M.D., Chicago, to Miss Sarah Coker, Atlanta, Ga., August 22.

EARL WARREN KEYES, M.D., to Miss Sarah Sage Hollman, both of Cleveland, August 25.

THEODORE E. INGRAM, M.D., to Miss Mary Summy, both of Marietta, Pa., August 29.

ALONZO BROWNING, M.D., to Miss Hulda Oveson, both of Ogden, Utah, August 22.

Deaths

Henry Nash Read, M.D., Brooklyn, N. Y.; Long Island College Hospital, Brooklyn, 1870; aged 69; a Fellow of the American Medical Association, and a member of the Kings County Medical Society, and the Associated Physicians of Long Island; pediatrician to the Long Island College Hospital and the Sheltering Arms Nursery; consulting pediatrician to the Bar Ridge Hospital; died at his home, September 2.

Edwin Taylor Robinson, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1900; aged 45; a Fellow of the American Medical Association; at one time resident physician of the Philadelphia Hospital; a member of the Obstetrical Society, Philadelphia; Philadelphia Pediatric Society, and Pathological Society of Philadelphia; died in the Lankenau Hospital following an operation, September 3.

Lewis Atterbury Stimson, M.D., New York; Bellevue Hospital Medical College, New York, 1874; aged 72; a member of the Medical Society of the State of New York, New York Surgical Society and the American College of Surgeons; a veteran of the Civil War; consulting surgeon to the New York, Bellevue, St. John's and Christ hospitals; died suddenly at his summer home in Long Island, September 17.

William F. Prather, M.D., Dayton, Ohio; University of Cincinnati, Cincinnati, 1891; aged 55; formerly a Fellow of the American Medical Association, and a member of the Ohio State Medical Association; treasurer of the county medical society for many years, and for ten years secretary of the Dayton Academy of Medicine; died at his home, September 1, from chronic nephritis.

Philip Wilfred Travis Moxon, M.D., Brooklyn, N. Y.; Harvard University Medical School, Boston, 1901; aged 43; a Fellow of the American Medical Association; assistant physician of the Kingston Avenue Hospital, and assistant pediatrician to the Polhemus Clinic; reported to have committed suicide while demented, September 3.

John Benjamin Roberts, M.D., Atlanta, Ga.; Medical College of the State of South Carolina, Charleston, 1867; aged 76; formerly a member of the Medical Association of the State of Georgia; superintendent of the Masonic Children's Home, Macon, Ga., and physician at the Soldiers' Home, Atlanta, Ga.; died at his home, August 30.

John C. Otis, M.D., Cincinnati, Ohio; Medical College of Ohio, Cincinnati, 1891; aged 60; for thirty-five years a member of the Cincinnati branch of the American Pharmaceutical Association; and for twenty years president of the Cincinnati College of Pharmacy; died, August 24, after an illness of four months.

John McDonald Russell, M.D., Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1895; aged 45; formerly a Fellow of the American Medical Association; a member of the Pennsylvania State Medical Society and the Austin Flint Medical Society; died at his home, August 31.

Wilbur C. Rice, M.D., Zephyrhills, Fla.; University of North Carolina, Chapel Hill, N. C., 1907; formerly a Fellow of the American Medical Association, and a member of the Ohio State Medical Society; drowned while bathing in Zephyr Lake, August 27.

Hubbard North Bradley, M.D., Bay City, Mich., University of Michigan, Ann Arbor, 1905; aged 42; a Fellow of the American Medical Association; died in the Augustana Hospital, Chicago, August 30, after an operation for an obstruction of the intestines.

David Gordon Allen, M.D., Washington, D. C.; College of physicians and Surgeons, Columbia University, New York, 1903; aged 38; past assistant surgeon, U. S. Navy; a Fellow of the American Medical Association; died on the *Panther*, September 5.

John Wesley Kurz, M.D., Cook, Minn.; University of Minnesota, Minneapolis, 1909; aged 32; a Fellow of the American Medical Association; a member of the Medical Society of the State of Minnesota; died August 31, from meningitis.

George August Woelffel, M.D., Willits, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; aged 49; a member of the California State Medical Society; for seventeen years a practitioner of Willits; died in San Francisco, August 21.

Edward Richard Ames, M.D., Knoxville, Iowa; Hahnemann Medical College, Chicago, 1896; aged 47; a Fellow of the American Medical Association; member of the Iowa State Medical Society; died at his home, September 3.

Solomon H. Peck, M.D., Oneonta, N. Y.; New York University Medical College, New York, 1862; aged 92; for more than forty-five years a practitioner in Ithaca, N. Y.; died at the home of his sister, September 2.

John Henry Wilkins, M.D., Victoria, Texas; Meharry Medical College, Nashville, Tenn., 1880; aged 63; for many years a colored practitioner in Victoria; died at Sherman, Texas, July 21, from arteriosclerosis.

John L. Overholt, M.D., Columbus Junction, Iowa; University of Iowa, Iowa City, 1887; aged 55; a member of the Iowa State Medical Society; was found dead in his office, September 1, from heart disease.

Herbert Harrison Cilley, M.D., Long Beach, Calif.; Rush Medical College, Chicago, 1892; aged 58; formerly a member of the Medical Society of the State of California; died at his home, July 16, from polycythemia.

Delphin Bienvenu, M.D., New Orleans, La.; Tulane University, New Orleans, 1878; aged 81; died at the Charity Hospital, September 2, as the result of injuries received in an automobile accident.

John Raymond Shank, M.D., Flint, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 56; formerly a member of the Michigan State Medical Society; died at his home, August 25, from heart disease.

Robert C. Knode, M.D., Gering, Neb.; University of Nebraska, Omaha, 1898; aged 40; a member of the Nebraska State Medical Association; was instantly killed by the overturning of his automobile near Burns, Wyo., August 23.

John James Fitzgerald, M.D., Saginaw, Mich.; Saginaw Valley Medical College, Saginaw, Mich., 1902; aged 50; a Fellow of the American Medical Association; died at his home, August 17, from cerebral hemorrhage.

William Anson Forrester, M.D., Cleveland; Bellevue Hospital Medical College, 1888; aged 52; was struck by a motorcycle at Baldwinsville, N. Y., August 21, and died two hours later from his injuries.

George Edward Craig, Evening Shade, Ark. (license, Arkansas, nongraduate, Aug. 18, 1903); aged 74; a Confederate veteran; died at the home of his daughter in Evening Shade, August 19.

Patrick S. Boland, M.D., Carbondale, Pa.; Illinois Medical College, Chicago, 1909; aged 44; formerly principal of the high school at Carbondale; died at his home, August 30, from heart disease.

Clarence M. Conant, M.D., Baltimore; New York Homeopathic Medical College, New York, 1873; aged 66; a clergyman of the Protestant Episcopal Church; died at his home, August 26.

Thomas Elmer Grubbs, M.D., Los Angeles; University of California, San Francisco, 1910; aged 29; a Fellow of the American Medical Association; died at his home, August 24.

Samuel Wood Hunter, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1868; aged 73; died in the University of Pennsylvania Hospital, Philadelphia, August 25.

John Fremont Axtell, M.D., Newton, N. H.; University of Vermont, Burlington, 1881; aged 61; a Fellow of the American Medical Association; died at his home, August 10.

Henry Alexander Morrisson, Ladelle, Ark. (license, Arkansas, nongraduate, August, 1903); aged 44; died at Monroe, La., July 11, from the effects of a gunshot wound.

George M. Dayton, M.D., Chattanooga, Tenn.; Eclectic Medical Institution, Cincinnati, 1876; aged 68; died in the Bethesda Hospital, Cincinnati, August 28.

Emerson K. Brundidge, M.D., Hazleton, Pa.; Jefferson Medical College, 1880; aged 74; died in the Home for the Aged, Bala, near Philadelphia, August 25.

William J. Sharbaugh, M.D., Altoona, Pa.; Kentucky School of Medicine, Louisville, 1891; aged 68; died at his home, September 2.

William Henry Reedy, M.D., Bloomington, Ill.; Rush Medical College, 1876; aged 69; died at his home, about August 22.

John Wesley Clerke, M.D., Green Cove Springs, Fla.; University of Toronto, Ont., 1884; aged 72; died at his home, August 12.

Henry Dinkel Heil, M.D., Decatur, Ill.; Rush Medical College, 1887; aged 59; died at his home, August 27, from heart disease.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

IDENTIFYING FAKE NEOSALVARSAN

Last week THE JOURNAL recorded the arrest of two individuals in New York City (Tomasses and Clements) charged with making and selling fake Neosalvarsan. The extent to which this fraud has been carried makes it desirable that physicians should be able to distinguish between the false and the genuine article. The Department of Health of the City of New York has furnished a table, which we publish, giving the distinguishing characteristics of the various lots of fake Neosalvarsan which were discovered by the inspectors of that department. There were, as will be remembered, three different lots, one that was made and sold by Tomasses and two others (Lots A and B) marketed by Clements. The New York health officials suggest that, as one of these fake products was put up in genuine tubes purchased from physicians, it is important that physicians using Neosalvarsan should make it an invariable practice to destroy the tube after using the product. It may not be out of place to warn physicians of the possibility that swindlers may put on the market fake imitations of Diarsenol and Neodiarsenol and other products identical with or similar to Salvarsan and Neosalvarsan.

IDENTIFYING MARKS OF FAKE AND GENUINE NEOSALVARSAN

TOMASSES' PRODUCT	CLEMENTS' PRODUCT (LOT A)	CLEMENTS' PRODUCT (LOT B)	THE GENUINE
Packing: In packages of five tubes, wrapped in waxed paper, sealed with two muddy red seals, the printing on which is somewhat indistinct. Altogether, however, the package is a very close imitation of the genuine.	In single tubes only.....	In single tubes only.....	In packages of five tubes wrapped in waxed paper, sealed with two bright red seals on which the printing is distinct.
Tubes: Made of aluminum, embossing of lion trade-mark on cap is indistinct, but so cleverly done as to require comparison with the original in order to detect. If label of aluminum container is removed the collar for the cap is seen to be much less sharply impressed. Dimensions of tube same as in genuine.	Tubes made of tin (the cap, however, of aluminum) and soldered instead of being spun in one piece. Exposed part of tube painted with aluminum paint.	This lot is put in genuine aluminum tubes which were purchased from physicians, and therefore constitute the most dangerous of the three frauds thus far discovered. (See below under "Insert Circular" and "Label.")	The line marking the collar for the cap is sharply defined.
Contents of Tube: Tube contains an insert circular, wrapped about the ampule. A plug of absorbent cotton is always present, but the file and piece of corrugated paper are missing.	The tube contains an insert circular, wrapped about the ampule. There is also a plug of cotton, but the file and piece of corrugated paper are missing.	The tube contains an insert circular, wrapped about the ampule. There is also a plug of cotton, but the file and piece of corrugated paper are missing.	The tube contains an insert circular, wrapped about the ampule, a small file, a plug of cotton, and the whole wrapped in a small piece of white corrugated paper.
Label on Tube: The label on the tube is a photographic copy of an *old* tube of the genuine and therefore bears the legend guaranteed by Farbwerke-Hoechst Company under Food and Drugs Act, June 30, 1906. Serial No. 2783 A. The label is a trifle wider than the original, and therefore usually slightly overlaps the bottom of the tube.	Same as that of Tomasses' product.	Genuine tubes, old style (see above).	Genuine product. Since early in 1916, no longer bears the printed guarantee under the Food and Drugs Act, for the printing of this on the label is no longer permitted by the Federal Government.
Serial Number: All the product thus far discovered bears the shipping number "A 25884" apparently *in print.*	The shipping numbers, apparently made with a rubber stamp, are twice the size of those on the genuine.	(See above)	The shipping numbers vary, and are done by means of a numbering stamp.
Insert Circular: Size 8½ by 5½ inches. Printed from reset type, except the display heading, which is photographically reproduced. A number of typographical differences, including the misspelling of the chemical name (5th line below heading) and of the word toxicity (44h line from below, first page) make the detection of this fraudulent circular a simple matter. The underscoring of the text on the first page extends beyond the left of the line of type.	Size 8½ inches by 5½ inches, i. e., slightly larger than the genuine. The circular, however, is photographically reproduced, so does not contain any distinguishing marks.	Same as in Lot A.....	Size 8¼ inches by 5⅝ inches. Underscoring of text at bottom of first page is exactly as long as the printed lines of type. Toxicity is spelled correctly. The chemical name, 5th line below heading, is spelled with a "y"—dioxy.
Ampule: This is evidently the work of an amateur. The upper, drawn-out end is invariably crooked.	Closely resembles the genuine ampule.	Same as in Lot A.....	Genuine ampule always well formed. Upper drawn-out end quite straight.
Label on Ampule: Photographically reproduced, this invariably bears the control letters "E B U" *in print.*	Photographic reproduction bears the control letters "V U H" *in print.*	Same as in Lot A.....	Control letters vary, and are hand stamped.
Contents of Ampule: Color quite unlike the genuine. It is dirty orange, resembling the color of aristol.	Color is light grayish-yellow, somewhat like that of precipitated sulphur.	Same as in Lot A.....	Color is yellow like that of English mustard.
Chemical Analysis: Does not at all respond to tests for the genuine.	Does not at all respond to tests for the genuine.	Does not at all respond to tests for the genuine.	

NEW YORK AND OREGON PERFORM A NATIONAL SERVICE

Filthy Advertisements Finally Driven from the Pages of the Police Gazette

National laws are more effective and more to be desired than local laws on questions that affect the well-being of the country as a whole. Yet it sometimes happens that the laws passed by a progressive state prove of distinct benefit to the nation. About five years ago THE JOURNAL called attention to the case of North Dakota which enacted a law requiring all package goods to be plainly labeled with the net weight of the contents. The law was a reasonable one and one to which no honest manufacturer should have objected. Nevertheless, one of the largest biscuit manufacturers in the country withdrew its products from the state rather than comply with that law, presumably in the belief that the people of North Dakota would repeal the law, so as to be able again to obtain the biscuits of that particular firm.

The company made a mistake. A number of independent concerns started up business within the State of North Dakota and sold biscuits under labels that complied with the law. As a result, the biscuit company that had withdrawn its products after about a six years' absence reentered the state with its products labeled in accordance with the state law. More important still, its products for sale in every state in the Union bore a net-weight label and the people of the whole United States were enabled to know just how much they were getting for their money. For this they had to thank the State of North Dakota. Since that time a federal net-weight law has been enacted.

Now comes another example of the benefit the country receives from the action of enlightened states. Four years ago Oregon passed a law making it a misdemeanor to publish any advertisement of the venereal quack type whether it applied to an individual claiming to treat venereal disease or to drugs or devices for the alleged cure of such diseases. The law, of course, was fought by the quacks, but was upheld by the Oregon Supreme Court. This law made itself felt as far away from the Pacific coast as New York City. In that city there is published a sheet known as the *Police Gazette*, one of the distinguishing features of which was its large number of filthy and nauseating venereal advertisements.

Greatly reduced reproduction of the venereal advertisements appearing in a single issue of the *Police Gazette* previous to Sept. 1, 1917, when the New York law prohibiting such advertisements went into effect.

After the Oregon law went into effect it was found that the copies of the *Police Gazette* offered for sale in that state had been "denatured" in that the "weak men" advertisements were deleted. In other words, the *Police Gazette* got out two editions, one still reeking with filthy advertisements and the other, which it called its "International Edition," with this particular type of advertisement omitted. The "International Edition" also was the one sold in Canada.

On Sept. 1, 1917, the state of New York put into effect a law very similar to that in Oregon. This hit the *Police Gazette* where it lives and, as a result, this periodical, as now published, while still containing some quack and nostrum advertisements—other than venereal—no longer smells to high heaven. As a matter of interest, we give a list of advertisements that ran more or less regularly before the New York law went into effect:

SANTAL MIDY: "Relieves in 24 hours."
REDSULES: "Sent by mail in plain sealed wrapper."
TURKO GIANT OINTMENT: "Men made strong and vigorous."
J. P.: "Restores lost vitality."
VACUUM MASSAGE: "Acquire manly power—vitality."
OLD DR. WELCH: "Free treatment, guaranteed for all the worst forms of blood poison."
DR. T. PIERCE: "Sexoid restores lost powers."
SKEEN'S PAINLESS REMEDIES: "Stricture treatment guaranteed."
PLANTEEN'S C. & C.: "Remedy for Men."
KNOXIT: "Relieves in five days."
DR. ROWE: "Varicocele, stricture and urinary diseases."
R. L. G. VIM-TONIC: "Regain your health and lost manly vigor."
SEX TONIQUE: "Quickly relieve any case of lost manhood."
DR. FRANKLIN ROBERTS: Prescription "Free to Weak Men."
H. G. C.: "Relieves within three days."
SALVAR: "Quick and perfect results without danger and at little cost."
ANTI-GONIC TABLETS: "The best preventives of stricture, cystitis, hydrocele."
MAGNETIC REMEDY CO.: "$10,000 Reward for any case of Lost Manhood our simple treatment will not restore."
DR. J. HENDERSON: "Stricture and discharges successfuly treated."
W. F. YOUNG, P. D. F.: "Varicocele, Hydrocele, etc., promptly relieved with inexpensive home treatment."
STERLING'S ROYAL REMEDY: "Blood Poison. Enables you to treat yourself with positive success."
PABST'S OKAY SPECIFIC: "Is a 'dead shot' for the diseases for which it is prescribed."
DR. MEYERS CO.: "We cure varicocele, stricture, chronic, nervous, blood, skin, kidney and bladder diseases."
B. M. C.: "Is a blood specific."
VI-TONOL CAPSULES: "The strength and vigor builder."
DR. GREY: "Over thirty years a specialist in the diseases of men."
NEW-OLD VACUUM CO.: "Virility for men." "Strengthens, develops and enlarges."
DR. SOUTHINGTON'S REMEDY CO.: "Ladies $1,000 Reward." "Safely relieves some of the longest, most obstinate, abnormal cases in 3 to 5 days."
INJECTION BROU: "The logical treatment. Direct—Quick—Effective."
BLACK-CAPS: "Discharges, inflammations and irritations permanently relieved in two to five days."
NURO-VITO OINTMENT: "Makes weak men strong and strong men stronger."
NOVA NURA CAPSULES: "Wait until you have cured yourself and regained healthy manhood with Nova Nura Capsules, then marry if you want to enjoy happy married life."
TAYLOR'S A-S: "A positive relief for Blood Poison in any or all its stages."
MI-VO: "Quickly Restores Lost Vim, Vigor and Vitality."

No longer will this putrid mass be scattered broadcast over the country through the agency of the *Police Gazette*. That publication's advertising pages have finally rendered to legislative pressure a tribute to decency which they were apparently unwilling to give voluntarily.

Infant Mortality.—The New York Milk Committee has just completed a survey of the death rate among babies in the larger cities of the United States. They find that the infant death rate has been reduced 11 per cent. since 1910. This reduction has been made among cities of 100,000 population or over. The smaller cities have not done so well. The reduction in cities between 50,000 and 100,000 population is only 2 per cent., while those under 50,000 show an increase of 5 per cent. The statistics of 150 cities, representing one fourth of the population of the United States, were studied, and include records of 670,000 living births and 68,000 deaths under 1 year of age for the year 1916, making an infant mortality rate of 100 baby deaths for each thousand births registered. The general reduction since 1910 is 9 per cent. The lowest infant death rate in the country in 1916 among cities of 100,000 or over was in Portland, Ore., with a record of only 55 baby deaths per thousand births. Fall River, Mass., has the highest rate, 163. In the second group of cities, those having a population of from 50,000 to 100,000, Hoboken, N. J., has the low rate of 77 against San Antonio, Tex., which has the high rate of 246. Among cities having a population of 50,000 and under, Brookline, Mass., leads with the low rate of 32 against Austin, Tex., whose rate was 182. Though there has been a general decrease for all the cities since 1910, the reports for 1916 compared with those of 1915 are not so encouraging. Only 13 of the larger cities showed a decreased death rate for 1916 over that of 1915. New York leads in the decrease for this period, having an infant mortality rate for 1916 of 93 per thousand births. Other cities in the group showing decrease were Philadelphia, 101; New Orleans, 96; Washington, 105; Jersey City, 102; Rochester, 82; St. Paul, 67; Denver, 84; Portland, 55; Oakland, 65; Scranton, 85; Grand Rapids, 115; Spokane, 57, and Albany, 96. The cities which showed an increase included Chicago, St. Louis, Pittsburgh, Detroit, Buffalo, San Francisco, Milwaukee, Cincinnati, Newark, Los Angeles, Minneapolis, Indianapolis, Providence and Louisville.

Correspondence

A SELECTIVE DRAFT OF PHYSICIANS BASED ON CLASSIFICATION

To the Editor:—As soon as the medical profession of the United States appreciates that no stigma is connected with a selective draft of physicians based on a previous careful classification, just so soon will genuine medical preparedness be realized in this country. The volunteer system is dead. Virile men will ever regret its passing, and yet it must be admitted that it was undemocratic and utterly inadequate. We are, as a people, slowly but surely coming to a realization that the right of suffrage is inalienably connected with the duty of national service, and that this service can only be economically and justly directed by the federal government. Only when there exists a willingness on the part of the individual to sink all personal dictates to the will of the federal government can a nation be said to have dedicated itself to a war.

It is said that enough physicians have volunteered to care for the first million increment of our National Army. Will it be possible to obtain similar quotas for the second and third million, by the same methods that have been employed in the past? I emphatically do not think so. Have we obtained through the volunteer system the best qualified men for the important duty of caring for our sick and wounded? Again emphatically no. A fair proportion of the physicians who have volunteered are men who have been attracted to a new life through a failure to succeed in their old. The Medical Reserve Corps today contains too many men over 40 and too few under 30. Many communities throughout the country have been stripped of their physicians, whereas from many other none have gone. Do these facts show that the medical profession is performing the best kind of national service?

The profession has failed so far to realize one basic principle connected with its part in this war. Responsibility for the aggressive prosecution of the war lies more heavily on the medical profession than on any other. The profession, under the direction of the regular officers, is the Medical Corps of the Army. To every regular Medical Corps officer, there are today sixteen reserve corps officers in the service of the United States. And this proportion will ever increase. In order to insure the obtaining of sufficient physicians for the continuation of the war, regardless of its length, it seems to me imperative that a selective draft be instituted. The greatest service that the profession could now do the country would be to self-impose such a draft, based on a competent classification. There certainly can be no stigma attached to placing in the hands of the federal government the power wisely to select those men that it needs for the successful prosecution of the present war.

RICHARD DERBY, Major, M. R. C.,
Camp Upton, Yaphank, L. I., N. Y.

WOMEN PHYSICIANS AND THE WAR

To the Editor:—When THE JOURNAL A. M. A. and the *California State Journal of Medicine* had published calls to physicians to offer their services to the government by enlisting in the Medical Reserve Corps; when Dr. T. W. Huntington of San Francisco, a member of the Advisory Commission of the Council of National Defense, had in various places addressed mass meetings of physicians, strongly urging them to volunteer, and when a personal letter of the same tenor had been sent to each member from the secretary of county medical societies, several women members of the medical profession in California responded to these appeals, in some cases making use of the application blanks provided in THE JOURNAL, etc. Some papers went to the War Office at Washington, D. C., and some (at least one) to the specified local headquarters.

These elicited the uniform reply, variously worded, that the War Department was not yet authorized to accept women medical officers.

Realizing that women physicians are, as a whole, freer than men from family ties and dependents, and knowing how extensively they have been called on during the war in Europe, sixty-five women physicians of San Francisco and vicinity met, June 22, in the rooms of the San Francisco County Medical Society and adopted the following resolution:

WHEREAS, Women physicians in Great Britain, France, Russia, Serbia, Austria and Germany have performed invaluable services during the present war, services which have been signally recognized by their respective governments; and,

WHEREAS, In the United States there are large numbers of women physicians fitted and equipped to render equally valuable service and to render service as efficient and valuable as can be rendered by men physicians, not only as anesthetists, radiographers and hospital and laboratory directors, but also as surgeons; now, therefore, be it

Resolved, That we urge upon the Secretary of War that the services of women physicians be utilized to the fullest extent by the United States War Department in the present war; that opportunities for medical service be given to medical women equal to the opportunities given to medical men, both as members of the staffs of base hospitals and otherwise; and that the women so serving be given the same rank, title and pay given to men holding equivalent positions.

As an earnest of good faith and a guarantee that there will be women ready to serve when the government is ready to use them, the following petition was signed by about thirty present:

We, the undersigned, offer our services to the War Department as members of the Medical Reserve Corps and will serve wherever sent, providing that opportunities for medical service be given to medical women equal to the opportunities given to medical men, both as members of the staffs of base hospitals and otherwise, and that women so serving be given the same rank, title and pay given to men holding equivalent positions.

Since then the number of signatures has increased to fifty-six from the entire state. In view of the fact that the United States government is desirous of profiting by the experience of the countries that have been at war, it is hoped that as soon as this omission is called to the attention of the profession as a whole and of the War Department, the regulations will be so modified as to make it possible to commission medical women.

ELSIE REED MITCHELL, M.D., San Francisco.

A FIELD EXPERIMENT ON POISON-OAK PREVENTION

To the Editor:—On a hot day, last July, without taking any precautions against my old enemy, poison-oak (*Rhus toxicodendron*), I climbed up a steep trail which was overgrown by tall briers and poison-oak bearing green leaves. The trail had fallen into disuse, and the wild growth obscured the path and at times reached above my head. I had to crowd my way through it, sometimes crawl under it, and constantly brush it aside. Finally, I lay down in the brush at the top of the cliff for about one hour surrounded by the poisonous leaves. Naturally, the poison-oak came into direct contact with my hands, wrists and face. I was well aware of my danger, but had no means to protect myself save that I avoided rubbing my face with my hands.

After an hour I walked a mile to my automobile and then drove 4 miles to the hotel, where I washed my face, hands, arms and neck (but not my hair) with soap and water. I avoided washing off all the soap, desiring to protect myself against the poison that doubtless clung to my clothes. Then I drove for three hours and a half, about 90 miles, before reaching home, where I immediately took a complete soap and hot water bath and made an entire change of clothing.

I am so very susceptible to the poison that I awaited the outcome with much interest. Ordinarily, without precautions, I should have been severely poisoned on the face, neck, ears, hands and legs. In this instance, the only poisoning that occurred was a little itching on the ankles, which had been very dusty and had rubbed much against the brush.

This result is quite in accord with laboratory experiments which I reported in the *Archives of Internal Medicine* in February, 1913. Some hours at least are usually required for the *Rhus* poison to penetrate sufficiently to cause dermatitis. If the poison is washed off before it penetrates, dermatitis is avoided.

The foregoing field experiment proves that *Rhus* dermatitis can be avoided by simple means, namely, by removing the poison within a few hours. Many variations of the method immediately suggest themselves: Soap may be carried along to be used at each stream crossed; liquid soap might be carried in a bottle and applied a few times to exposed skin surfaces. The time necessary for the poison to penetrate can be much lengthened and the toxicity much decreased by covering the skin with a film of cottonseed oil.

It is thus clear that with a little precaution the plants of this poisonous family can be defied. As a detail of preventive measures the following is recommended:

Before exposure, apply cottonseed oil, or soapsuds, to all exposed skin surfaces, and use soap in some form every hour during exposure.

As soon after exposure as possible, take the following precautions:

Take a complete soap and hot water bath, not neglecting the hair.

Change all clothing, including hat and shoes.

Avoid contact with clothing or other articles that have been exposed to the poison, until they have been freed from the poison.

EDWARD VON ADELUNG, M.D., Oakland, Calif.

THE ROLL OF HONOR

To the Editor:—The communication from Dr. Edward von Adelung, THE JOURNAL, Sept. 8, 1917, p. 843, stressing the equal or greater financial sacrifice of the small income practitioner as opposed to the very large income practitioner in responding to the call to the colors is interesting and correctly estimates the situation. However, is a financial sacrifice the great sacrifice made?

The medical man who closes his office, abandons his local practice, and thus automatically stops all local revenue, in many instances with certain unavoidable "overhead" expenses still going on, makes a patriotic sacrifice for his country. This hardship can be measured in dollars and cents.

The very great obstacle to the medical man is this financial uncertainty; here comes about the *impasse* in his mind that accounts for the hesitation in volunteering. Can both ends meet under the proposed régime? The very great sacrifice, however, that he makes cannot be measured in dollars and cents. It consists of his own willingness to leave home and family for an indefinite period; to go to any part of the earth when ordered; to encounter all of the uncertainties of military life and finally to submit entirely to the risks and exigencies of the great war. Here is the real sacrifice voluntarily being made by thousands of our fellows, and that cannot be measured by the dollar mark.

JOHN C. SILLIMAN, M.D., Palo Alto, Calif.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MENCIÈRE'S IODOFORM-PERUVIAN BALSAM MIXTURE

To the Editor:—Please furnish me the formula for Mencière's iodoform-Peruvian balsam mixture.

A. G. WILDE, M.D.,
Captain M. C., U. S. Army, Base Hospital No. 5, Nogales, Ariz.

ANSWER.—The formula differs as to whether it is to be used for a spray in emergencies—as when the wounded are coming in in large numbers and every minute counts—or whether it is to be used as a permanent dressing. For the spray, the mixture is made with 10 gm. each of iodoform, guaiacol, eucalyptol and Peruvian balsam, 100 gm. alcohol and ether to 1,000 c.c. Cheyrou says of this (Abstract 51, THE JOURNAL, April 28, 1917, p. 1294) that after the surgical toilet of the wound, this fluid is sprayed forcibly into all the crevices and cavities of the wound. It takes only a few seconds; the hands do not come in contact with the wound, and only a small amount of the fluid is used while the powerful disinfectants ward off complications. The dressing does not have to be changed until the man reaches the base hospital.

The formula for the permanent dressing was given in abstracts printed in THE JOURNAL, March 6, 1915, p. 861, Oct. 16, 1915, p. 1407, and Dec. 4, 1915, p. 2040: Solution A, iodoform, 10 gm.; guaiacol, 10 gm.; eucalyptol, 10 gm.; balsam of Peru, 30 gm.; ether, 100 gm., to be used to soak the wicks of gauze or to be injected into the sinuses with a Roux syringe. If hydrogen peroxid is lacking, or if one is prodigal, Solution B may be used for washing the wound before embalmment. Solution B differs from A only in the quantity of ether, which is 1,000 gm. instead of the 100 of Solution A. In case of idiosyncrasy or intolerance after a few days' treatment (which is exceptional), the iodoform is omitted. Directions for use are given in the abstracts.

Delestre has also found the Mencière mixture useful in the base hospital for the permanent dressing of wounds (*Progrès médical*, April 21, 1917, p. 133). He applied it in 200 cases of severe wounds, *grands blessés*, first clearing the wound of all crushed tissues and then washing it clean with water containing guaiacol and benzoic acid (he does not give the proportions), then "embalming" the wound with the Mencière mixture, raising the edges of the wound with Kocher forceps for four or five minutes to form a well. He said that he had seen this always prevent the development of germs in the wound and admirably arrest beginning infections, even grave ones, while the wound cleaned up and healed over remarkably fast. "In short," he concluded, "I am convinced that the Mencière treatment will soon win numerous adherents and realize at the same time economy in time, in personnel and in . . . existences."

POLYCHROME STAIN FOR PROTOZOA AND BLOOD CORPUSCLES

To the Editor:—1. In THE JOURNAL (Aug. 25, 1917, p. 679) I note a formula for blood staining. The working formula is supposed to be given clearly, but it seems to me to be lacking in definiteness. Nothing is said about the amount of alcohol or the amount of glycerin to be added, and it occurs to me that there is some reversal of process in the mixing of solutions and the filtering process.

2. Where is the *Kitasato Journal* to be obtained?

A. M. CRANE, M.D., Marion, Ohio.

ANSWER.—1. The description of the procedure would have been clearer if the following additional paragraph had been cited: "The powder obtained by drying out the mixture is a methylenazureosin, of a dark violet, and weighs about 0.3 or 0.5 gm. It is dissolved in methyl alcohol and neutral glycerin in the proportion of 0.5 part of the methylenazureosin to 150 parts each of methyl alcohol and neutral glycerin. The extremely light powder is ground carefully in a mortar, and the alcohol is added in small amounts. The powder once dissolved in the alcohol is filtered, and then the glycerin is added. The solution thus obtained keeps in a cool dark place for a long time."

We will lend the *Kitasato Archives* on receipt of 6 cents.

"NIKALGIN"

To the Editor:—*Collier's* has a special article this week on "Nikalgin." Have you any information on this subject? It sounds like nostrum stuff.

P. R. MINAHAN, M.D., Fond du Lac, Wis.

ANSWER.—"Nikalgin" is said to be the "invention" of Gordon Edwards, an engineer. Large claims for its anesthetic and antiseptic virtues have been made. While no very definite information seems to be forthcoming regarding the preparation, it has been said to be "composed of quinin, hydrochloric acid and urea." This would indicate that "Nikalgin" may be nothing more wonderful than the well known local anesthetic, quinin and urea hydrochlorid, the *Quininæ et Ureæ Hydrochloridum* of the U. S. Pharmacopeia, or a modification of it.

WHAT IS A MIL?

To the Editor:—What is a mil? It seems to be used as a unit of quantity. E. C.

ANSWER.—The mil is a contraction for "milliliter," a term that has been proposed as more logical and convenient than "c.c." to express the same amount.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 2-3. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

CALIFORNIA: Los Angeles, Oct. 9-13. Secretary, Dr. Charles B. Pinkham, State Capitol, Sacramento.

COLORADO: Denver, Oct. 2. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 9-11. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington, D. C.

GEORGIA: Atlanta, Oct. 9-11. Sec., Dr. C. T. Nolan, Marietta, Ga.

IDAHO: Pocatello, Oct. 2. Sec., Dr. Charles A. Dettman, Burke.

ILLINOIS: Chicago, Oct. 9-11. Superintendent of Registration, Mr. F. C. Dodds, Springfield.

IOWA: Des Moines, Oct. 9-11. Sec., Dr. G. H. Sumner, State House, Des Moines.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 2-5. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 2. Sec., Dr. William C. Riddell, Power Bldg., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Chicago, Oct. 10-18. Sec., Dr. J. S. Rodman, 2106 Walnut St., Philadelphia.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8. Sec., Dr. R. K. McClanahan, East Las Vegas.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Oct. 2-5. Chief, Examinations Division, Harlan S. Horner, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Oct. 9-10. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, Oct. 2. Sec., Dr. M. Quevedo Baez, San Juan.

RHODE ISLAND: Providence, Oct. 4-5. Sec., Dr. Byron O. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 1-2. Sec., Dr. G. F. Harding, Templeton Bldg., Salt Lake City.

WYOMING: Laramie, Oct. 10-12. Sec., Dr. H. E. McCollum, Laramie.

Michigan May Examination

B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Detroit, May 29-31, 1917. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass, and in no subject was the percentage to be less than 50. Of the 59 candidates examined, 57 passed and 2 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Atlanta Medical College	(1915)	79.1
Chicago College of Medicine and Surgery	(1916)	86.3
University and Bellevue Hospital	(1915)	87.5
Detroit College of Medicine and Surgery	(1916)	80.3; (1917) 78.1; 78.6; 79; 79.8; 80.8; 80.9; 81; 81.6; 81.9; 82; 82.1; 82.4; 82.4; 82.6; 82.7; 82.8; 83.4; 83.7; 83.8; 83.9; 84.5; 84.9; 85.1; 85.2; 85.3; 85.3; 85.7; 85.8; 86; 86.1; 86.1; 86.2; 86.3; 86.4; 86.8; 86.9; 87; 87.2; 87.3; 87.5; 87.6; 88.2; 88.2; 88.9; 89.5; 89.6; 91.2.
Johns Hopkins University	(1917)	84.4
Rush Medical College	(1917)	87.4
University of Arkansas	(1909)	80.2
University of Michigan Medical School	(1916)	84.9
University of Toronto	(1917)	82.4
Western University Faculty of Medicine	(1912)	89.2
FAILED		
Detroit College of Medicine and Surgery	(1917)	76, 78.5

Michigan June Examination

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June, 1917. The examination covered 14 subjects and included 100 questions. The average percentage required to pass was 75 and not less than 50 per cent. must have been obtained in each subject. Of the 54 candidates examined, 53 passed and one failed. Forty-five candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Hahnemann Medical College	(1917)	91.8
University of Illinois (1916) 89.9; (1917) 83.6.		
University of Michigan, Homeopathic Medical School	(1917)	80.3, 89.9
University of Michigan	(1917)	80.4; 81.5; 83; 83.2; 83.3; 83.4; 84.2; 84.2; 84.3; 84.4; 84.8; 85; 85.3; 85.3; 85.4; 85.4; 85.5; 85.5; 85.6; 85.6; 85.7; 85.8; 85.9; 85.9; 86; 86.2; 86.2; 86.3; 86.4; 86.5; 86.7; 86.8; 87.1; 87.2; 87.5; 87.6; 87.9; 87.9; 88.3; 88.8; 89; 89.1; 89.2; 91.3; 92.8.
University of Oklahoma	(1916)	81.2
University of Pennsylvania	(1916)	91.1
Womens Medical College Pennsylvania	(1915)	91.6
FAILED		
University of Michigan	(1917)	79.4

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
American Medical Missionary College	(1907)	Illinois
Atlanta Medical College	(1916)	Georgia
Baltimore Medical College	(1911)	Maryland
Baltimore University	(1899)	W. Virginia
Baylor University	(1913)	Texas
Beaumont Hospital Medical College	(1900)	Missouri
Bellevue Hospital	(1876)	Penna.
Chicago College of Med. and Surg.	(1913)	Illinois
College of Physicians and Surgeons	(1914)	Maryland
Detroit College of Medicine and Surgery	(1917)	Ohio
Eclectic Medical College	(1915)	Ohio
Hahnemann Medical College	(1906)	Illinois
Howard University	(1915)	Illinois
Illinois Medical College	(1904)	Georgia
Iowa College of Physicians and Surgeons	(1903)	Indiana
Johns Hopkins Medical School	(1897)	Iowa
Louisville Medical College	(1907)	Maryland
Marquette University	(1894)	Oklahoma
Medical College of Ohio	(1884)	Indiana (1886) Ohio
Northwestern University	(1915)	Illinois
Rush Medical College	(1915)	Illinois (1916) Illinois
St. Louis College of Physicians and Surgeons	(1890)	Missouri
St. Louis University, School of Medicine	(1916)	Missouri
Starling Ohio Medical College	(1913)	Ohio
Syrian Protestant College	(1886)	Missouri
Tufts College, Medical School	(1903)	Wisconsin
University of Illinois (1905)	Illinois (1914)	Illinois (1915) Illinois (1916) Illinois
University of Michigan	(1908)	Georgia
University of Michigan Homeopathic Medical School	(1888)	Ohio
Univ. of Louisville (1911)	Missouri (1913)	Indiana (1916) Kentucky
University of Nashville	(1899)	Kansas
University of Tennessee	(1886)	Kansas
Washington University	(1908)	Missouri (1911) Missouri
Vanderbilt University	(1916)	Tennessee

Book Notices

THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By Russell D. Carman, M.D., Head of Section on Roentgenology, Division of Medicine, Mayo Clinic, and Albert Miller, M.D., First Assistant in Section on Roentgenology, Division of Medicine, Mayo Clinic. Cloth. Price, $6 net. Pp. 558, with 504 illustrations. Philadelphia: W. B. Saunders Company, 1917.

The authors have selected and arranged in a systematic manner the facts of Roentgen diagnosis which they believe to be worth while, and especially those which they have verified by experience with a large amount of material. Extensive descriptions of apparatus are omitted, but detailed protocols are given of the findings in a considerable number of cases. The authors give freely of their experience, and even record their mistakes because of the lessons they may teach. The unusually large number of cases examined by the authors, their well known ability, and the close cooperation between the various departments of the clinic with which they are connected naturally give their statements weight which they would not have otherwise. For instance: "In the detection of cancer of the stomach, the Roentgen rays take precedence over all other methods. . . . In the Mayo Clinic, 95 per cent. of gastric cancers have given distinct roentgenologic signs of their presence, a percentage not approached by any other process of examination." This surely is a strong statement, but the evidence presented seems to warrant it. The authors insist that the roentgenologist should be acquainted with the principal clinical facts, and that these should at least grossly correspond to his own findings. On the basis of their own statistics, it is stated that nine tenths of the ulcers of the stomach give distinct roentgenologic indications of gastric disease, and in an overwhelming majority of these the Roentgen signs are either pathognomonic or strongly presumptive of ulcer. Because of the many difficulties by which roentgenography of gallstones is beset, the authors have had little success, notwithstanding the fact that abundant material has been at their disposal. The difficulty has not been to find shadows, for

these were often present, but to find shadows that seemed definite and characteristic. Likewise, in lesions of the gallbladder without discoverable stones, the Roentgen ray can only exceptionally furnish decisive evidence. Duodenal ulcer they believe can always be diagnosed by the Roentgen ray. More than 2,300 cases have been proved by operation, and a great number have been diagnosed but no operation performed. With regard to the possibility of diagnosing chronic appendicitis, the authors make the following rather significant statement: "On the whole, the value of the Roentgen signs of appendicitis appears to depend not only on the intensity of the examiner's endeavor, but also, to some extent, on the degree of his enthusiasm."

The conclusions are based on facts observed in many cases; they will be interesting reading for the general practitioner. The book is a plea for careful, thorough, conscientious roentgenography that will do much to establish Roentgen diagnosis as worth while.

ADVANCED FIRST-AID INSTRUCTIONS FOR MINERS. A Report on Standardization. By a Committee of Surgeons: G. H. Halberstadt, A. F. Knoefel, W. A. Lynott, W. S. Rountree and M. J. Shields. Department of the Interior, Bureau of Mines. Paper. Price, 20 cents. Pp. 154, with 65 illustrations. Washington: Government Printing Office, 1917.

This pamphlet is the result of an evolution coinciding with the progress of first aid teaching among the employees of the mines of the country. At first this was the work of individual physicians in the anthracite region of Pennsylvania, in Alabama and in Indiana, then had the cooperation and assistance of the Red Cross, and finally was taken over as a function of the Bureau of Mines of the Department of the Interior. The pamphlet was prepared by a committee of surgeons, including those first interested in the subject, and gives the essence of their practical experience in the principles of first aid work that may be placed in lay hands. Organization, equipment, a bit of anatomy and physiology, methods of meeting emergencies, applying first aid dressings and apparatus, handling the injured, what to do and what to avoid, are all clearly and concisely set forth. The usefulness of the pamphlet may be said to extend beyond its originally intended function.

GLAUCOMA: A HANDBOOK FOR THE GENERAL PRACTITIONER. By Robert Henry Elliot, M.D., B.S., Sc.D. Cloth. Price, $1.50 net. Pp. 60, with 12 illustrations. New York: Paul B. Hoeber, 1917.

The author states that he has in manuscript form a much more comprehensive volume on this subject, but the war makes its publication impossible at this time. This monograph, which will serve as an epitome of the larger book, is especially adapted for the general practitioner, because it touches only on the important practical phases of glaucoma and the most approved methods of dealing with this disease. The various theories and questions still in dispute, the scientific investigations into its etiology, etc., are to be discussed fully in the other publication. The general practitioner will find in this monograph a safe guide in the diagnosis, and descriptions of accepted operations as well as the general treatment of glaucoma.

Hamstringing the Child Labor Laws.—"Already in Connecticut, Minnesota, New Hampshire and Vermont no time has been lost in repealing or suspending the operation of the child labor laws. Everywhere the case is the same. There is a clamor to cut the school hours and the school months. The farmer declares he cannot get along without child labor. The truck gardener echoes the call. The makers of munitions say they need children in their plants. The canners assert that without children they cannot put up the great amount of food products the country needs. The vast percentage of these claims are false. They are not made in good faith. They are founded in greed. They are inspired by a desire for cheap labor. They are marked by an utter callousness to the fate of the instruments they seek to employ and misuse." This note, taken from the Columbus (Ohio) *Citizen*, is an indication of the difficulty of enforcing public health and social legislation which interferes to any extent with manufacturing or other industries.

Social Medicine, Medical Economics and Miscellany

Medicopharmaceutic Ethics

At a conference held in Melbourne between representatives of the Victoria Branch of the British Medical Association and representatives of the Pharmaceutical Society of Australasia, the Pharmacy Board and Pharmaceutical Defense Ltd., the following rules of practice, among others, were adopted. The rules are so common-sense that they are worthy of consideration in this country.

1. *Prescriptions—Doubtful Interpretations.*—In cases where there is some doubt regarding the interpretation of any prescription, it shall be the duty of the pharmacist dispensing the same to communicate with the prescriber if possible. It is preferable that such communication should be in writing. In cases where it is necessary to telephone to the prescriber, care should be taken to see that the conversation is as private as possible.

2. *Correction by Prescriber.*—The prescriber in such a case will recognize that the pharmacist is simply performing what is an important part of his professional duty, and will at once cooperate with him in the interests of his patient. He will correct or confirm the prescription. If a correction is necessary, he may request the pharmacist to retain the prescription, and will forward to him the corrected one. As far as possible, verbal corrections should be confirmed in writing.

3. *The Attitude of Prescriber and Dispenser* should be one of mutual respect and cooperation.

4. *Unusual Characteristics.*—In cases where a prescription contains (*a*) an incompatibility, (*b*) an unusually large dose, (*c*) a dangerous dose, or possesses some other characteristic of an unusual nature, the prescriber shall indicate that such peculiarity is intended, and is not inadvertent, by underlining that particular part of the prescription, and initialing the same in the margin.

5. *Where Prescriber Cannot Be Consulted.*—Where a pharmacist is doubtful of the interpretation of a prescription, and it is not possible to consult the prescriber, he shall, after careful consideration, modify the prescription in accordance with what he believes to be the intention of the prescriber. He should, if possible, subsequently communicate with the prescriber by letter, and inform him of what he has done. Care should be taken to see that such discretion, when exercised, does not interfere with the therapeutic value of the medicine.

6. *Modifications to Be Noted.*—Where a pharmacist finds it necessary to modify a prescription, under paragraph 5, he should make a marginal note on the prescription indicating the course he has adopted in dispensing the prescription. The marginal note should be as brief as possible.

7. *Prescribing by Telephone.*—When prescriptions are dictated by telephone, the following rule should be observed: The prescriber should first write out the prescription, and then read it through the telephone to the dispenser. He should request the dispenser to read to him the prescription as taken down, and should, as soon as possible, forward the original prescription to the pharmacist either by post or by the patient.

8. *Criticism Deprecated.*—It is undesirable that a prescriber should adversely criticize a pharmacist unless he is guilty of some offense in his calling. The pharmacist on his part should refrain from discussing with the patient the prescriber or the merits of his prescription. Matters relating to professional fees or the prices charged for medicines should not be discussed with patients.

9. *Unsigned Prescriptions.*—When a prescription is received with the "usual signature," the pharmacist should ascertain from the patient the name of the prescriber, and, if possible, submit the prescription for his signature before dispensing it so as to relieve the prescriber as well as himself from the risk of penalty. The use of a rubber stamp in lieu of the prescriber's written signature should be avoided.

10. *Repetition of Prescriptions.*—When it is desired that a prescription should not be repeated, the prescriber should write on the prescription, "Not to Be Repeated," or "To Be Repeated twice only," or any specified number of times. In cases where such directions are given, the pharmacist who

dispenses the prescription should indorse the prescription as follows: Supplied (here insert date and pharmacist's signature).

11. *"Spoonfuls" to Be Abandoned.*—With the object of securing greater accuracy in dosage, the use of the words "teaspoon," "dessertspoon," and "tablespoon" in the directions on a prescription should be discouraged. Prescribers should write the dosage in drams or ounces, and patients should be advised to measure the doses in a measure-glass.

Medicolegal

Power of Lumber Company to Contract for Services of Physician

(Jackson Lumber Company vs. Trammell (Ala.), 74 So. R. 469)

The Supreme Court of Alabama says that plaintiff Trammell sought to recover for services rendered, as a physician, to the employees of the defendant company, under a contract for a fixed salary. The defendant, as one of the defenses interposed, pleaded that it was a corporation, and was not authorized by its charter so to contract for the services of a physician. The defendant was engaged in the operation of a sawmill. The court judicially knows, as it is a matter of common knowledge, that in such an enterprise much machinery is used, that the employment of laborers is essential to its operation, and that accidents are likely to occur. Without laborers the corporation would be powerless to carry out the purposes of its creation. It is therefore necessarily interested in the welfare of its employees. Much depends on their health and their contentment in the service, and to conserve their physical comfort tends to their efficiency, and the greater their efficiency the greater the profits to the defendant company. It could hardly be denied that a private corporation engaged in the manufacture of lumber could, if it saw fit, erect houses for the use of its employees and surround them with such sanitary conditions as would tend to promote their general and physical welfare, even though its charter might contain no such provisions. These are matters which relate to what might be termed the "internal management" of the corporation, with which, in the absence of fraud or unfair dealing, the courts as a rule do not interfere. The employment of a physician to look after the health of the employees is but in line with the suggestions above made, and concerns one of those questions of internal management which the court thinks may be fairly incidental to the objects of the corporation's creation. By contracting for such medical attention the corporation is not engaging in any business other than that expressly authorized in its charter, but merely adopts this as one of the means of executing its express powers (and as to such means the corporation must be held to have a right of reasonable choice), which the court thinks can be said in this instance to have had a very natural and reasonable tendency to aid in the accomplishment of the purpose for which it was created. But, on a rehearing, the court reverses a judgment obtained by the plaintiff, and remands the cause for a new trial, because of improper argument by counsel for the plaintiff, in directly or indirectly calling the attention of the jury to the fact that the plaintiff was a poor man, while the defendant was a big corporation, a judgment against which could not hurt it.

Validity of Ordinance Restricting Location of Private Hospitals

(Lawrence vs. Nissen et al. (N. C.), 91 S. E. R. 1036)

The Supreme Court of North Carolina holds valid an ordinance which states that the construction, operation or maintenance of a hospital, or place or institution of like character where sick or diseased persons are treated or surgical operations performed, for pay, within the corporate limits of the city of Winston-Salem, and within 100 feet of a building or house used or occupied as a residence, is declared to be a nuisance, or injury to adjacent property, and to the general public, and is prohibited. The court says that the enactment of such an ordinance is plainly within the powers conferred by the legislature when the aldermen are vested with power, not only to grant building permits, but also to prohibit the construction of buildings or structures that may be a nuisance or injurious to adjacent property. Having the authority to enact the ordinance, the reasonableness of it is not a matter for the court. Neither is it necessary that the court should find that conditions actually exist that require the enactment of the ordinance. It is sufficient if a state of facts could exist which would justify it. The ordinance is preventive in character and intended to protect the comfort, health and safety of the citizens. A hospital may not be a nuisance per se, or in and of itself, but it may become such because of its location, or by reason of the manner in which it is conducted. The objection was made to the ordinance that it was unduly discriminative, in that it applied only to hospitals established for profit, and not for charity; but the court is not impressed with the force of the objection. The discriminations which are open to objection are those wherein persons engaged in the same business are subjected to different restrictions, or are held entitled to different privileges under the same conditions. It is only then that the discrimination can be said to impair that equal right which all can claim in the enforcement of the laws. The establishment and conduct of hospitals for pay is now a recognized and established business. It is rare to find a city or town of any size without such institutions. These hospitals are generally established, owned and conducted by members of the medical profession for their own convenience and profit. No one is engaged in the business of establishing and conducting hospitals for charity. There are public hospitals in large cities with charity wards as well as pay wards in them, established and conducted by the municipal government or by trustees of some endowment fund donated by philanthropy; but the establishment of charitable hospitals is in no sense a recognized business. For this reason it is probable that the board of aldermen did not consider it necessary or important to embrace charity hospitals within the ordinance, deeming the erection of one by some local philanthropist a remote possibility, which could be attended to in the future if application for a building permit should be made.

Construction of Statute with Reference to Prescribing Intoxicating Liquors

(State vs. Morton (S. D.), 162 N. W. R. 155)

The Supreme Court of South Dakota reverses a judgment of conviction of the defendant, a practicing physician, who was charged with furnishing to a named person a prescription for intoxicating liquor to be used as a beverage, and not for medicinal purposes. The prescription was for one-half pint of brandy, and the defendant testified that his directions were to take an ordinary wine glass of it three times a day ten or fifteen minutes before eating. The court says that it is of the view that the evidence was wholly insufficient to show the prescription was issued for intoxicating liquors to be used as a beverage in violation of Chapter 123, Laws of 1905. Under that statute a physician may sell or give a prescription for intoxicating liquors in cases of actual sickness, and when the person to whom the prescription is given is a patient of the physician and is afflicted with some disease, and his condition is such that, in the opinion of the physician, the taking by such patient of intoxicating liquors would be beneficial to him. The court is of the view that Section 1 of Chapter 123 was intended to apply when some one other than the patient himself makes application to the physician for the prescription. In this case the physician must ascertain whether or not the person by whom the liquor is to be used is actually sick; and the sick person by whom the liquor is to be used might not be present before the physician issuing the prescription, and might not be under the care of a physician at all, or might be the patient of some other physician. The court is also of the view that Section 2 of Chapter 123

has application in cases like the one at bar wherein the purchaser of the prescription is the patient of the physician who issues the prescription, and has sought the professional aid, skill and advice of such physician. The court concedes that a physician without any reasonable cause therefor could not arbitrarily say that a person was afflicted with a disease and, in his opinion, needed an alcoholic stimulant; but that was not this case. The undisputed evidence in this case showed that the person to whom the prescription was given personally applied to the defendant, in his capacity as a physician, for aid and advice in relation to his physical condition; that such person had failing appetite, general depression and weakness, felt tired from overwork and lack of nourishment, was not in a normal condition of body, was subnormal and was ailing. The court is of the view that a person in that physical condition was sick and afflicted with a disease, within the meaning of this statute, and in such a condition as would reasonably warrant a physician in exercising his judgment or opinion as to whether or not such patient needed an alcoholic stimulant. When a person in such a physical condition applies to a physician for medical aid and advice, the court is of the view that such a person is a patient within the meaning of the statute. How does a physician ordinarily ascertain whether or not a patient is sick and afflicted with some disease and in a condition that would authorize a prescription for alcoholic liquor? By what the patient tells him taken in connection with the physician's personal observation of the physical appearance and examination of the patient. The essence of this class of cases is whether or not under all the evidence adduced on the trial the physician acted in good faith in giving the prescription. In this case, as in all other criminal actions, the burden of proof was on the state to show by evidence, beyond all reasonable doubt, that the defendant violated the provisions of the statute.

Physician Not Guardian for Patient

(Ulbrand vs. Bennett et al. (Ore.), 163 Pac. R. 445)

The Supreme Court of Oregon, in reversing a judgment rendered against the named defendant and a physician for money belonging to the plaintiff, but in the hands of the defendant, which was used to settle a claim of the physician against the plaintiff for services and to pay a hospital bill, etc., says it is undoubtedly the rule that any transaction between a physician and a patient inuring to the advantage of the former will be carefully scrutinized, and stricter control over it will be exercised than in cases in which no such confidential relation exists between the parties. The precept, however, does not go so far as to constitute a medical man a guardian for his patient, and it is not enough to say that he merely had knowledge of the action of a third party against whom the patient seeks relief without showing also that the physician participated in such action.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
Am. Assn. for Study and Prev. of Inf. Mort., Richmond, Va., Oct. 15-17.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Roentgen Ray Society, New York, Sept. 20-22.
Colorado State Medical Society, Colorado Springs, Sept. 25-27.
Delaware State Medical Society, Middletown, Oct. 8-9.
Indiana State Medical Association, Evansville, Sept. 26-28.
Kentucky State Medical Association, Louisville, Oct. 16-18.
Medical Association of the Southwest, Kansas City, Oct. 15-17.
Minnesota State Medical Association, St. Paul, Oct. 10-12.
Mississippi Valley Medical Association, Toledo, O., Oct. 9-11.
Nevada State Medical Association, Reno, Oct. 18-19.
New Mexico Medical Society, Las Cruces, Oct. 4-6.
Pennsylvania State Medical Society, Pittsburgh, Sept. 24-27.
Southern Medical Association, Memphis, November 12-15.
Vermont State Medical Society, Barre, Oct. 11-12.
Virginia State Medical Society, Roanoke, Oct. 23-26.
West Virginia State Medical Association, Fairmont, Oct. 2-4.
Wisconsin State Medical Society, Milwaukee, Oct. 3-5.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, XIV, No. 3

1 *Presence of Bacillus Abortus Bovinus in Certified Milk. E. C. Fleischner and K. F. Meyer, San Francisco.—p. 157.
2 *Phenolsulphonephthalein Elimination in Infants and Young Children. J. C. Gittings and A. G. Mitchell, Philadelphia.—p. 174.
3 *Use of Pancreatic Vitamin in Cases of Marasmus. W. H. Eddy and J. C. Roper, New York.—p. 189.
4 *Variations in Infants of Total Blood Solids and Concentration of Sodium Chlorid in Plasma. A. M. Courtney and H. L. Fales, New York.—p. 202.
5 *Rumination in First Year of Life. C. G. Grulee, Chicago.—p. 210.
6 Gliosarcoma in Infant of Seven Weeks, Resembling Hydrocephalus. L. E. Holt, New York.—p. 219.
7 *Effect of Cod Liver Oil on Growth in Case of "Intestinal Infantilism." L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 222.

1. **Bacillus Abortus Bovinus in Certified Milk.**—The following question was the basis of the investigation made by Fleischner and Meyer. Can one, by semi-annual tuberculin tests, discover reactors so early in the course of their disease as not to throw out tubercle bacilli in the milk and in this way disseminating bovine tuberculosis? To determine this fact, samples of certified milk were injected into guinea-pigs in an effort to produce tuberculous lesions, if tubercle bacilli were present. Samples of certified milk were collected over a period of several months from the regular distributors so that the product as it was ordinarily consumed should be investigated. The investigation showed that while *B. abortus* is, for practical purposes, always present in the certified milk produced in the San Francisco Bay regions, tubercle bacilli are not present in this same milk in sufficient number to give tuberculosis to guinea-pigs. Hence there is no necessity for pasteurizing certified milk on account of any danger that it may possess as a disseminator of bovine tuberculosis to infants. If the *B. abortus* is present in certified milk to the extent evident from these experiments, it is difficult to consider it pathogenic for infants, without, so far as is known, ever having produced recognizable lesions on postmortem examination.

2. **Phenolsulphonephthalein Elimination in Children.**—Phenolsulphonephthalein elimination was studied by Gittings and Mitchell in seventy-five patients with definite renal disease. The ages of the patients varied from 3 weeks to 10 years. They found no noteworthy difference in the phenolsulphonephthalein elimination of patients with albumin and casts in the urine—apart from the true nephritic groups—and of those whose urinary findings were negative. In the groups of acute infections, miscellaneous diseases and pyelitis no marked diminution in the amount of phenolsulphonephthalein elimination was noted, except in two of the three patients suffering from tuberculous meningitis. One of these died on the same day that the test was made, and the low phenolsulphonephthalein elimination (15 per cent. in two hours) was of no clinical significance. The second patient gave less than 5 per cent. of phenolsulphonephthalein in two hours, but lived for seven days. The presence of large amounts of albumin and an excessive number of leukocytes in the urine suggests the possibility of tuberculous lesions in the kidneys, which would account for their poor function. Neither of these cases is included in any of the summaries. The cases of nephritis showed a distinct diminution in phenolsulphonephthalein percentages. Presumably all of them belonged to the type of parenchymatous nephritis. None died under observation except a patient with cardiorenal disease, whose death was cardiac and not uremic.

3. **Use of Pancreatic Vitamin in Cases of Marasmus.**—From the combined results of clinical and experimental observation, the authors conclude that a diet of condensed milk and cereal is markedly deficient in natural vitamins. The addition of pancreatic vitamins to such a diet influences growth. The use of pancreatic vitamin seems to promise definite hope of

success as an agent for stimulating the growth of marasmic children. The dosage and the conditions under which the effect is produced are under investigation.

4. **Blood Solids and Concentration of Sodium Chlorid in Plasma of Infants.**—Courtney and Fales found that, in general, all infants not in normal condition had low blood chlorid, frequently very much lower than normal, but, except in edema, or under some unusual condition of blood concentration, the percentage of the total solids in the blood of infants tended to remain constant.

5. **Rumination in Infants.**—In the six cases reported by Grulee, certain phenomena have seemed to be suspiciously common: first, ulcer of the duodenum; second, pylorospasm. Grulee is of the opinion that the condition can be explained on the basis of a hyperexcitability of the involuntary muscles, as suggested by Hess. Treatment to be successful should probably be based on attention to the psychic condition of the child.

7. **Effect of Cod Liver Oil on Growth in Case of Intestinal Infantilism.**—In the case cited by Holt and his associates there were but slight evidences of old rickets and none whatever of any active rickets. The cod liver oil was administered with the hope that it might influence salt retention. At the same time, by increasing the diet, especially the amount of milk, an attempt was made to increase the salt intake. The results in this case showed conclusively how essential to proper growth is the assimilation of the salts ingested. The authors believe that the cod liver oil was by far the most important factor in the result, the next being the milk.

American Journal of Medical Sciences, Philadelphia

September, CLIV, No. 3

8 *Case of Adamantinoma Showing Epithelial Pearls. S. Graves, Louisville, Ky.—p. 313.
9 *Pathologic and Clinical Aspects of Thrombo-Angeitis Obliterans. L. Buerger, New York.—p. 319.
10 *Treatment of Peripheral Gangrene Due to Thrombo-Angeitis Obliterans, with Reference to Femoral Vein Ligation and Sodium Citrate Injections. N. Ginsburg, Philadelphia.—p. 328.
11 Newer Concepts of Neuroses; Estimate of Their Clinical Value. S. I. Schwab, St. Louis.—p. 338.
12 *Primary Malignant Neoplasm of Lung. M. Packard, New York. —p. 351.
13 *Individual Quantitative Dosage of Tuberculin Determined by Cutaneous Reaction; Its Employment in Treatment of Surgical Tuberculosis. P. R. Sieber, Pittsburgh.—p. 365.
14 Relation of Recent Epidemic of Respiratory Diseases in Denver to Pulmonary Tuberculosis. J. J. Waring, Denver.—p. 371.
15 Analysis of Thirty Cases of Pulmonary Tuberculosis Treated by Induction of Artificial Pneumothorax. P. H. Ringer, Asheville, N. C.—p. 380.
16 Causes of Recurrent Symptoms After Operation for Gastric and Duodenal Ulcer. A. O. Wilensky, New York.—p. 387.
17 *Study of Significance of Heredity and Infection in Diabetes Mellitus. J. R. Williams, Rochester, N. Y.—p. 396.
18 Study of Thermic Fever, with Special Reference to Blood and Urine Chemical Findings. R. B. H. Gradwohl and E. Schisler, St. Louis.—p. 407.
19 *Classification of Chronic High Blood Pressure Cases. L. M. Warfield, Milwaukee, Wis.—p. 414.
20 Study of Cases of Ascites in Wards of Canton Hospital, China. W. W. Cadbury, Canton, China.—p. 425.

8. **Adamantinoma Showing Epithelial Pearls.**—This report is submitted by Graves because it is that of an adamantinoma developing purely from adamantoblasts, shows epithelial pearls, and occurred in a 16-year-old negro boy. The specimen was removed from the superior maxilla. The tumor had been first noticed about one year before as a swelling of the gum, had grown gradually and been painless.

9. **Thrombo-Angeitis Obliterans.**—The lesions in thrombo-angeitis obliterans in chronologic order are summarized by Buerger: (1) an acute inflammatory lesion with occlusive thrombosis, the formation of miliary giant cell foci; (2) the stage of organization or healing, with the disappearance of the miliary giant cell foci, the organization and canalization of the clot, the disappearance of the inflammatory products; (3) the development of fibrotic tissue in the adventitia that binds together the artery, vein and nerves.

10. **Treatment of Gangrene in Thrombo-Angeitis Obliterans.**—Femoral vein ligation has been performed by Ginsburg in four cases of gangrene in thrombo-angeitis obliterans. Independently, or in conjunction with this operation, the employment of intravenous injections of a saline solution, either 2 per cent. sodium citrate or Ringer's solution, has been carried out. Ginsburg found the operation to be of doubtful value since only one of the four patients showed any improvement following its performance. This patient has unquestionably improved to the point of security of the limb in which the venous current was obstructed. Involvement of the other leg is now taking place and the value attaching to the procedure may be still greater in the future, since it may preserve one of his extremities. The operation is a hazardous one and may cost the life of the patient, as occurred in one of the author's cases. If ligation is done the ligation should always be placed below the entrance of the long saphenous vein into the femoral vein, thereby preserving some collateral venous circulation in the affected limb. Following this operation there is developed a large posterior femoral vein passing from the popliteal space as a tributary to the sciatic or inferior gluteal vein. In one of Ginsburg's cases ligation had no effect whatever in retarding the progress of the disease, and even failed to produce venous stasis in the affected extremity. It was a convincing example of how greatly impaired was the arterial distribution to the peripheral parts in the affected limb, and proved that the problem cannot be attacked except by dealing with the arterial element in this disturbed circulation. Ginsburg believes that the poor arterial circulation present is much better than the results attained by any of the proposed surgical measures to increase the circulation in the involved extremity.

12. **Primary Malignant Neoplasm of Lung.**—Packard's series of primary cancer consists of seven cases. Four of these have been verified by necropsy. Another was confirmed by operation. Five of them occurred in the male sex, and in six the initial lesion was on the right side. The ages varied from 38 to 65 years. Pain and cough were the first symptoms in six, while weakness and exhaustion constituted the prime reason that caused the other patient to seek medical advice. Dyspnea was a very early symptom in all, and although at first it was only marked in some, after physical exertion it invariably became worse, so that later in the disease it actually amounted to orthopnea. Expectoration was variable. Hemorrhage was very common, and occurred in more or less quantities in five of the cases. Tumor cells were never found, although a careful and systematic search was instituted in all instances. Cachexia was a late symptom in all but one case. Fever was present in three cases, reaching as high as 105 in one person. This was accompanied by night sweats and chills, so that tuberculosis and abscess of the lung were very seriously considered. Leukocytosis was present in every instance, varying from 10,000 to 20,000 per cubic millimeter. There was nothing to be noted about the differential blood count, with the exception of eosinophilia in one of the cases in which the diagnosis of sarcoma was sustained.

13. **Dosage of Tuberculin in Surgical Tuberculosis.**—Of the forty cases reported by Sieber nineteen had glandular disease, all with the cervical group affected, one case showing evidence of involvement of the axillary group as well. Of the joints, in six cases the hip was involved, in three the knee, in one the ankle, and in two the wrist. In four cases the vertebrae were affected. The metatarsal bones and the phalanges of the hand were each diseased in two cases. The lesion was located once in the greater tuberosity of the humerus; sixteen cases were open and twenty-four were closed. Nineteen patients sought treatment because of cervical adenitis, seven of them having sinuses. Of the nineteen cases, twelve were discharged as well, six were improved, and one unimproved when last seen. Of the six improved cases, two failed to return after receiving six injections, one left the city after receiving two injections, and the remaining three are still under treatment. There were six cases of tuberculous arthritis of the hip; one patient has been discharged as well and is now at work; three were improved and two unimproved. In three cases the lesions were situated in the knee. One was discharged with moderate limitation

of motion. The remaining two improved and were lost sight of. In Pott's disease the results have not been as satisfactory; however, in all but one of these cases the disease was well advanced, with the presence of large abscesses. Throughout the series Sieber found that the results varied in inverse ratio to advancement of the disease. Those cases in which abscesses or secondary infections were present showed slower improvement and less satisfactory ultimate results. The best results were obtained when tuberculin treatment was instituted early. Of the forty patients treated, nineteen have been discharged well, sixteen improved, and five have been lost sight of, with the condition unimproved.

17. **Heredity and Infection in Diabetes Mellitus.**—The importance of both arteriosclerosis and infection in diabetes are emphasized by Williams who believes that there is a liability that arteriosclerosis and diabetes are transmissible from parent to offspring. Infection, both acute and chronic, may precipitate a metabolic collapse or sufficiently lower the function of food metabolism in an individual with either general or local arteriosclerosis as to produce the clinical phenomena which is called diabetes. Individuals with a family history of arteriosclerosis, diabetes and obesity should be safeguarded against all latent and concealed or focal infections. Special attention should be directed to the head, so that dead teeth, apical abscesses, incompletely filled root canals, inflamed gums, infected and diseased tonsils, sinus and middle-ear disease should not exist. Such individuals should be safeguarded in every way against those conditions which induce or hasten the arteriosclerotic process.

19. **Chronic High Blood Pressure Cases.**—Warfield advises that in a blood pressure reading the whole record should be taken, systolic, diastolic, pulse pressure and pulse rate. The pressure picture is the term suggested for the figures representing the component parts of the blood pressure reading. The diastolic and pulse pressure give more information than the systolic pressure. Warfield divides high pressure cases into three groups called (*a*) chronic interstitial nephritis, (*b*) hereditary or cerebral type, (*c*) arteriosclerotic or cardiac type. Causes of death are usually anemia in Group A, cerebral hemorrhage in Group B, and cardiac decompensation in Group C. The term "cardiorenal disease" he would reserve for the cases of Group A, which suffer from cardiac decompensation; the term hypertensive cardiovascular disease for cases of Group B. Myocardial insufficiency covers most of the cases in Group C.

Journal of Abnormal Psychology, Boston

June, XII, No. 2

21 Sketch for Study of New England Character. J. J. Putnam, Boston.—p. 73.
22 Psychopathic Aphonia, Stammering and Catalepsy. B. Sidis, Portsmouth, N. H.—p. 100.
23 Graphic Representation of Personality and Psychosis. H. D. Singer, Kankakee, Ill.—p. 114.
24 Distinctive Features in Psychologic Test Measurements Made on Dementia Praecox and Chronic Alcoholic Patients. S. L. Pressey, Boston.—p. 130.

Journal of Infectious Diseases, Chicago

September, XXI, No. 3

25 *Titration of Diphtheria Toxin in Unilaterally Nephrectomized Guinea-Pigs. H. R. Wahl, Cleveland.—p. 227.
26 *Comparative Study of Different Antigens and of Different Temperatures of Incubation in Wassermann Test. J. W. Smith, Jr., and W. J. MacNeal, New York.—p. 233.
27 Thermal Coagulation Point of Blood and Serum. G. F. Leonard, New Brunswick, N. J.—p. 249.
28 *Comparison Between Subcutaneous and Intracutaneous Methods of Testing Virulence of Diphtheria Bacilli. M. A. Smeeton, New York.—p. 254.
29 Experiments in Filtration of Antihog-Cholera Serum. B. H. Edgington, A. Broerman and E. W. Porter, Reynoldsburg, Ohio.—p. 258.
30 *Schick Test, with Especial Reference to Negro. L. T. Wright, Washington, D. C.—p. 265.
31 *Effect of Tethelin on Experimental Tuberculosis. H. J. Corper, Chicago.—p. 269.
32 *Precipitin Production in Allergic Rabbits. L. Hektoen, Chicago.—p. 279.
33 Modification of McCrady Method of Numerical Interpretation of Fermentation Tube Results. A. Wolman and H. L. Weaver.—p. 287.
34 *Immune Reactions in Rabbits Injected with Micrococci from Acute Poliomyelitis. G. Mathers and K. Howell, Chicago.—p. 292.
35 *Etiologic Agent and Localizing Factor of Abscesses in Myositis Purulenta Tropica. E. L. Walker, San Francisco.—p. 298.
36 *Streptobacillus from Urine. H. L. Celler and W. Thalhimer, New York.—p. 303.
37 Growth of Streptococci in Blood Carbohydrate Medium. D. J. Davis, Chicago.—p. 308.
38 Subcutaneous Abscesses in Rabbits. Carrier State and Its Relation to Rabbit Septicemia. D. J. Davis, Chicago.—p. 314.
39 Inhibitory Action of Lactic Acid on Certain Bacteria and Fungi. E. L. Macdonald, Chicago.—p. 322.

25. **Titrations of Diphtheria Toxins.**—The object of Wahl's study was to determine the effect of decreased kidney substance, produced by nephrectomy, on the fatal dose of diphtheria toxin. The results showed a marked diminution in resistance of the nephrectomized animals as compared with normal pigs. When, however, the operative factor with its coincident traumatism and shock was minimized by the use of controls of splenectomized pigs or pigs in which a piece of omentum had been removed, the difference in the resistance was not so great, though still distinctly in favor of the control animal.

26. **Comparative Studies of Wassermann Tests.**—Smith and MacNeal summarize their results as follows: 1. The use of the cholesterinized antigen, with the first incubation, at 8 C., for four hours, constitutes a more sensitive test for syphilis than does any of the other methods examined. 2. The cholesteinized antigen, both at 37 C. and at 8 C., is apt to yield nonspecific complement fixation. Therefore, in a diagnostic reaction, fixation with the cholesterinized antigen alone is, at best, of only doubtful significance. 3. The simple extract antigen, with the first incubation at 8 C., is more sensitive than the cholesterinized antigen at 37 C., and in this series it did not give any false positive reactions, according to the available evidence. 4. The acetone insoluble preparation, made according to the method of Noguchi, is less sensitive, either at 37 C., or at 8 C., than is the cholesterin-reinforced antigen at either temperature, and is also less sensitive than the simple extract at 8 C. It is more sensitive than the simple extract at 37 C. and, in this series, has, according to the available evidence, given no false positive reactions.

28. **Virulence of Diphtheria Bacilli.**—From the number of cultures tested by Smeeton the intracutaneous appears to give more accurate results than the subcutaneous method and has a further advantage of being more economical in time and animals. A possible disadvantage lies in the fact that if one toxin pig dies, four or six tests must be repeated.

30. **Schick Test in Negro.**—In practically all cases examined by Wright the pigment was darker in color than the skin. The reaction is equally as clearcut in negroes as it is in whites. This study of 210 cases indicates that adult negroes possess about the same degree of immunity to diphtheria as do white adults. Lichenification occurs in all positive cases regardless of the color of the skin and promises to be of value in differentiating positive from negative reactions in those rare cases in which an increase of pigmentation is impossible.

31. **Tethelin in Experimental Tuberculosis.**—Tethelin, the active principle of the anterior lobe of the pituitary, administered subcutaneously in 25 mg. doses on alternate days for eighteen days before and during early infection to tuberculous guinea-pigs, infected with virulent human tubercle bacilli, had no appreciable effect on the progress of the tuberculosis or on the duration of life of these animals. Tethelin administered subcutaneously in 25 mg. doses daily to guinea-pigs sensitized to tuberculosis by dead and living (avirulent) human tubercle bacilli had no appreciable effect on the development, recession, or rupture of intracutaneous tubercles produced by dead human tubercle bacilli nor on deep puncture wounds of the skin in these animals.

32. **Precipitin Production in Allergic Rabbits.**—It was noted by Hektoen that in rabbits previously injected with foreign blood or serum the subsequent injection of a different blood or serum may reawaken the production of precipitins for the antigens first injected, and the serum of such rabbits may

be unsuitable for practical precipitin tests because of the wide range of its action. Similar manifestations of an increased reactivity may be obtained in dogs as regards lysin and agglutinin for goat and rat corpuscles, respectively, as well as in rabbits and human beings with respect to typhoid agglutinins, and the increase of typhoid agglutinins in infectious conditions in persons previously inoculated or infected with typhoid bacilli may not signify typhoid.

34. **Immune Reactions with Poliomyelitic Cocci.**—In the blood of rabbits injected with various strains of poliomyelitis cocci, specific agglutinins, opsonins and complement fixing bodies could be demonstrated by Mathers and Howell. The complement fixing bodies were demonstrable in high dilutions and were specific for the poliomyelitis group in most instances. Occasionally, however, some fixation occurred with pneumococcus and hemolytic streptococcus antigens, but this was rare. Conversely, the pneumococcus immune serum and the hemolytic streptococcus immune serum gave some fixation with the poliomyelitic antigens; in the instance of the pneumococcus antigen the reaction seemed apparently nonspecific. The opsonins were demonstrable in high dilutions and were specific—the serum being without opsonic effect on hemolytic streptococci, green-producing streptococci and pneumococci. The agglutinins were demonstrable in low dilutions only. Spontaneous agglutination of the cocci interferes with agglutination tests. These results suggest that serologic tests, especially opsonin determination, may prove of value in the diagnosis of acute poliomyelitis, in case the coccus is found to be associated closely with the disease.

35. **Etiology of Myositis Purulenta Tropica.**—Walker holds that myositis purulenta tropica is a peculiar form of pyemia. The causal agent in its production is most certainly the pyogenic cocci usually found, and probably always present at some time, in the abscesses. The localizing factor which determines the peculiar situation of the pyemic foci is probably filarial, but the evidence on this point is not conclusive.

36. **Streptobacillus from Urine.**—A hitherto undescribed gram-positive streptobacillus has repeatedly been isolated by Celler and Thalhimer from the urine of cases suffering from bladder symptoms. It is of low virulence and large doses injected intravenously into rabbits do not kill the animals. The organism does not usually remain in the circulating blood longer than twenty-four hours. After intravenous injection, the streptobacillus can be recovered from the bladder urine sometimes as early as twenty-four hours, and regularly after forty-eight to seventy-two hours. It has also been recovered from the urine secured by ureteral catheterization several days after intravenous injection, but has not been recovered with the same regularity from the kidneys of these animals. This organism seems, therefore, to possess peculiar biologic properties which enable it to maintain itself in the urinary bladder, and probably in the ureter and renal pelvis as well, for an indefinite period.

Journal of Laboratory and Clinical Medicine, St. Louis

August, II, No. 11

40 Principles Involved in Economic Readjustment of Dietaries. J. J. R. Macleod, Cleveland.—p. 743.
41 *Cheese Poisoning: Toxicogenic Bacillus Isolated from Cheese. W. Levin, Ann Arbor, Mich.—p. 761.
42 *Experience in Treatment of Typhoid by Intravenous Injection of Sensitized Typhoid Vaccine Sediment. F. P. Gay, Berkeley, Calif.—p. 785.
43 Relation of Physical Chemistry to Irrigation of Wounds. J. F. McClendon, Minneapolis.—p. 803.
44 Antidotes in Mercuric Chlorid Poisoning. Value of Phosphite and Hypophosphite Combinations. B. Fantus and E. G. Hyatt, Chicago.—p. 813.
45 Apparatus for Studying Effect of Drugs on Isolated Guinea-Pig Uterus. C. R. Eckler, Indianapolis.—p. 819.
46 Use of Indicators to Determine H-Ion Concentration; Apparatus for Teaching. L. Rosenberg, Dallas, Texas.—p. 825.
47 Mass Urinalysis. M. Warren, New York.—p. 826.
48 Guinea-Pigs for Profit. M. A. Kroeber, Mount Vernon, N. Y. —p. 831.

41. **Cheese Poisoning.**—Six persons were poisoned by eating American cheese. A piece of the cheese was studied bacteriologically by Levin and he describes the organism found in the cultures. It is a facultative anaerobic bacillus, resembling in form and dimensions the *B. coli*. The size of the bacillus varies from coccus-like forms to large rods, depending on the kind and age of the media in which it is grown. As a rule, its length is about three times its width. The organism grows singly and also in the diplo form. Thread formation has been infrequently observed. It does not form spores. Depending on the media and the conditions of growth the bacillus may show active motility, sluggish motility, or even marked Brownian movement. The organism takes all stains readily. With Loeffler's methylene blue the ends of the bacillus stain a dark blue, while the inner portion resembles a vacuole. It is gram-negative and not acid-fast. Smears made from the organs of an animal killed by the bacillus, when stained according to the Welch method, show the organisms to have capsule-like bodies around them. These, however, could never be verified as capsules. Morphologic and biochemical reactions, and agglutination tests prove that the bacillus belongs to the colon group. That it is not a true colon bacillus is shown by its formation of a soluble thermostabile poison. Poisoning cannot be induced in animals either by feeding the poisonous cheese or by feeding with cultures of the isolated organism. Mice, guinea-pigs, rabbits, cats, rats and dogs are susceptible, in the order named, to the bacilius. The bacillus does not form tyrotoxicon. Five-tenths per cent. lactose broth, neutral to phenolphthalein, is the medium most suitable for the production of the poison. The soluble thermostabile poison produced by the bacillus is a toxin-like body, of unknown chemical constitution. Immunity to the organism can be acquired by vaccine and immune serum injections. It can also be obtained by injections of the sterile, cell free filtrate from lactose broth cultures. A lesser but yet marked protection can be acquired by injections of alkaline ether extracts of whey from milk cultures.

42. **Typhoid Treated by Injection of Sensitized Vaccine Sediment.**—Gay records his experience in the treatment of ninety-eight authenticated cases of typhoid over a period of two and one-half years by the intravenous injection of a polyvalent sensitized typhoid vaccine sediment (Gay-Claypole vaccine). The mortality in these cases was 6.6 per cent. and the complications few. Relapses were distinctly reduced in those cases in which the intravenous injections were followed by a series of three subcutaneous inoculations after the temperature had reached normal.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, XLVI, No. 2

49 Opportunities in Neurology. F. Tilney, New York.—p. 81.
50 *Some New Fields in Neurology and Psychiatry. T. W. Salmon, New York.—p. 90.
51 Analysis of Fourteen Cases of Senile Dementia Showing Neither Atrophic nor Arteriosclerotic Cerebral Changes at Necropsy. L. B. Alford, St. Louis.—p. 100.

50. **New Fields in Neurology and Psychiatry.**—It is pointed out by Salmon that psychiatry has a most important part to play in the great movements for social betterment which we see being undertaken with such high hopes and with such wide popular interest and support. In some of these movements—mental hygiene, provision for the feebleminded, eugenics, the control of inebriety and the better management of abnormal children—the part of the psychiatrist must be that of leadership not only in research but in the formulation and to a certain extent in the execution of policies. No other science provides so direct an approach to the problems which must be solved before these movements can succeed. In problems such as those of the treatment of criminals and the prevention of crime, prostitution and dependency, the part of the psychiatrist is to lead in research and to contribute information and guidance whenever it appears that mental factors exercise important influences. It is above all things essential that the psychiatrist should not have the phases of these problems on which he is to work arbitrarily assigned to him by others. He must obtain a view of the whole problem and must make for himself the decision as to which factors are those which can best be understood by psychiatric study or managed by the methods of dealing with conduct disorders which psychiatry has developed in its long experience with mental diseases and other abnormal states.

Journal-Lancet, Minneapolis

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52 Hospital Standardization. J. G. Bowman, Chicago.—p. 559.
53 Ocular Tuberculosis. General Discussion. F. E. Burch, St. Paul.—p. 561.
54 Medical Journals from Standpoint of Contributor. M. H. Mellish, Rochester.—p. 568.
55 Tonsillar Infections and Their Diagnosis. S. Oftedal, Fargo, N. D.—p. 570.
56 Therapeutic Use of Protein Milk: Report of Cases. C. A. Scherer, Fargo, N. D.—p. 574.
57 Comparison of German and American Classifications of Alimentary Disturbances. M. Seham, Minneapolis.—p. 577.

Laryngoscope, St. Louis

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58 Hay Fever and Hyperesthesic Rhinitis. W. Scheppegrell, New Orleans.—p. 597.
59 Histopathology of Internal Ear in Typhoid, Purpura Hemorrhagica and Epidemic Cerebrospinal Meningitis. F. Tanaka, Okayama, Japan.—p. 608.
60 Case of Cyst in Larynx. W. B. Chamberlin, Cleveland.—p. 622.
61 Case of Epidural Abscess with Paralytic Symptoms Simulating Brain Abscess and Meningitis. Operation and Recovery. J. C. Calhoun, London.—p. 624.
62 Acute Otitis Media of Diphtheritic Origin. W. C. Bane, Denver. —p. 626.
63 Chancre of Pharyngeal Tonsil. H. C. Haden, Galveston, Texas. —p. 629.
64 Sarcoma of Soft Palate. B. G. Voorhees, Elmira, N. Y.—p. 632.
65 Unestablished Incision for Resection of Nasal Septum or an All Skin Incision. C. E. Purcell, Paducah, Ky.—p. 634.
66 Stammering; Responsibility. E. Tompkins, Pasadena, Calif.—p. 637.
67 Unusual Infection from Ethmoiditis. J. A. Thompson, Cincinnati. —p. 643.

Medical Record, New York

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68 Merits of Medical and of Surgical Treatment Respectively in Peptic Ulcer. J. N. Hall, Denver.—p. 353.
69 Hypothesis Regarding Physiochemical Nature of Cancer. E. P. Robinson, New York.—p. 356.
70 Therapeutics of Uranium Nitrate. R. W. Wilcox, New York.—p. 361.
71 Tonsils and Rheumatism. A. Bardes, New York.—p. 364.
72 Consolidated Nursing Service. C. Barker, New York.—p. 366.
73 Relation of Capillary Caliber to Normal and Pathologic Sensation and Function. W. V. Gage, Worland, Wyo.—p. 367.

Military Surgeon, Washington, D. C.

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74 Epidemiologic Study of Outbreak of Measles at Camp Wilson, San Antonio, Texas. E. L. Munson.—p. 257.
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76 Observations by Junior Surgeon of John B. Murphy Hospital Unit, Serving with British Expeditionary Force, France. R. B. Acker.—p. 295.
77 Bone Graft Surgery; Its Application to Fracture Caused by Modern Projectiles. E. B. Downer.—p. 316.
78 More Important Surgical Cases Treated at Base Hospital No. 2, Fort Bliss, Texas, Between March, 1916, and March, 1917. W. L. Keller.—p. 325.

Missouri State Medical Association Journal, St. Louis

September, XIV, No. 9

79 *Intestinal Obstruction; Review of Experimental Observations with Practical Suggestions. J. N. Jackson, Kansas City.—p. 377.
80 Anterior Poliomyelitis: Statistical Study; Summary of Recent Work; Orthopedic Treatment. A. O'Reilly, St. Louis.—p. 382.
81 Adult Thymus and Its Two Types of Dysfunction. G. H. Hoxie, Kansas City.—p. 389.
82 Importance of Nonsurgical Work of Army Medical Officer. D. Morton, St. Joseph.—p. 393.
83 Infectious Diseases of Lower Bowel. W. H. Stauffer, St. Louis. —p. 395.
84 Typhoid Perforation: Report of Case on the One Hundred and Sixteenth Day, with Recovery. E. Schisler, St. Louis.—p. 398.
85 Significance of Angiosclerosis of Retinal Blood Vessels. H. Moulton, Fort Smith, Ark.—p. 401.

79. **Intestinal Obstruction.**—The correctness of the views held by eminent surgeons is emphasized by Jackson. It is evident that surgical relief of obstruction is the only final salvation for life, and should be instituted early before the patient has already absorbed a lethal dose of poison. Delay is only excusable at all in doubtful diagnosis. It is really not excusable then for practically all acute abdominal crises which may in any way simulate obstruction are themselves likewise surgical conditions. The only excuse for the responsible physician is the refusal of patient to accept his advice. The lost body fluid should be replaced by proctoclysis and hypodermoclysis, both before and after operation. Thus fluids are replaced, toxins diluted, elimination increased and acidosis neutralized. Jackson favors the direct surgical drainage of the high intestinal area, advocated by McKenna. The principle is, a quick enterostomy high in the jejunum as the sole primary operation. Six to eight weeks later, with the patient in good condition, the obstructed and damaged area is successfully resected.

New Orleans Medical and Surgical Journal

September, LXX, No. 3

86 Hematuria; Its Clinical Significance. H. W. E. Walther, New Orleans.—p. 207.
87 Gunshot Wounds of Extremities. J. C. Willis and A. B. Nelson, Shreveport.—p. 212.
88 Treatment of Blackwater Fever. T. E. Wright, Monroe.—p. 222.
89 Use of Nonspecific Protein in Ophthalmology. T. J. Dimitry, New Orleans.—p. 231.
90 Treatment of Vomiting of Pregnancy with Ovarian Extract and Corpus Luteum. P. J. Carter, New Orleans.—p. 234.
91 Compound Fractures; Plea for Early Permanent Fixation. W. M. Perkins, New Orleans.—p. 245.
92 Cardioptosis. A. E. Fossier, New Orleans.—p. 254.
93 Oral Prophylaxis at School Age. H. W. Guthrie, New Orleans. —p. 262.
94 Vaccine Treatment of Whooping Cough. C. J. Bloom, New Orleans.—p. 275.

Ohio State Medical Journal, Columbus

September, XIII, No. 9

95 Why Births and Deaths Should Be Registered. J. E. Monger, Columbus.—p. 589.
96 Report of Case of Right Strangulated Inguinal Hernia with Pieces of Wood in Strangulated Loop of Ileum. F. C. Laramore, Mount Vernon.—p. 591.
97 Anomalies in Behavior of Uterine Musculature. A. J. Skeel, Cleveland.—p. 592.
98 *Treatment of Bichlorid of Mercury Poisoning. H. B. Weiss, Cincinnati.—p. 595.
99 Modern Treatment of Syphilis. J. L. Murray, Toledo.—p. 598.

98. **Treatment of Bichlorid of Mercury Poisoning.**—Weiss has used the principle of colloidal swelling described by Fischer, as the basis for his treatment. He gives alkali, hypertonic salts by mouth, by rectum and intravenously, and he has used a pleasant alkaline drink, modified from the old English potus imperialis which consists of cream of tartar, 4 gm.; sodium citrate, 2 gm., and sugar, 2 gm., with lemon or orange juice to taste, to 8 ounces of water. This drink is best made by placing the cream of tartar and sodium citrate into the lemonade just before using. In conjunction with this Weiss uses the intravenous injection of Fischer's solution. The treatment commences by washing the stomach with the whites of three eggs and one quart of milk, followed by water until the stomach is emptied. Before the stomach tube is removed 3 ounces of magnesium sulphate with 6 ounces of water is introduced and allowed to remain in the stomach. The patient is then given a soap-suds enema. If the patient did not vomit shortly after taking the poison and did not reach medical aid for at least three hours later, an intravenous injection of Fischer's solution is given at once. Usually over 1,000 c.c. are introduced into the system. Weiss has given as high as 2,000 c.c. of the solution without any disturbance to the patient. Then the patient is given eight glasses of "imperial drink" a day and large quantities of water by mouth. He is allowed a liberal diet, almost anything except an excess of protein foods. The analysis of the urine is used as a control of the treatment. The patient should void large quantities of urine as he is taking large amounts of fluid. Endeavor to keep the urine alkaline. Weiss has had complications only in one patient; he developed a severe necrosis of the mucous membrane of both sides of the cheek, and later in the course of the disease he had severe intestinal hemorrhages, in all probability from the colitis produced by the mercury excreted through the bowel.

Ophthalmic Record, Chicago

September, XXVI, No. 9

100 Case of Recurrent Neuro-Epithelioma. G. O. Ring, Philadelphia. —p. 437.
101 A Book on "Eiesight" by Walter Bayley (1529-1592). L. H. Taylor, Wilkes-Barre.—p. 445.
102 Factors to be Considered in Intracapsular Cataract Operation. A. S. Green and L. D. Green, San Francisco.—p. 455.
103 Steel in Eye without Symptoms. F. Allport, Chicago.—p. 458.

104 Case of Recurrent Paralysis of Right Abducens Lasting Twenty-One Years. M. J. Leavitt, Brooklyn.—p. 460.
105 Frequency of Occlusion of Inner End of Canaliculus in Old Trachoma. H. Gifford, Omaha.—p. 462.

Ophthalmology, Seattle

July, XIII, No. 4

106 Eye Strain. M. Corry, Delhi, India.—p. 557.
107 Cataract Operation as Done by Spanish and Latin American Surgeons. J. S. Fernandez, Havana, Cuba.—p. 576.
108 New Operation for Cataract. L. D. Green, San Francisco.—p. 579.
109 Etiology and Treatment of Glaucoma. H. G. Thomas, Oakland, Calif.—p. 582.
110 Pathology of Glaucoma. C. Zimmermann, Milwaukee, Wis.—p. 588.
111 State Legislation Concerning Blind. F. Allport, Chicago.—p. 597.

Rhode Island Medical Journal, Providence

September, I, No. 9

112 Acute Abdomen; Report of Cases. C. O. Cooke, Providence.—p. 187.
113 Adult Rectal Prolapse; Two Cases and Contrast. R. W. Jackson. Fall River, Mass.—p. 191.
114 Diastolic Blood Pressure. O. A. Faust, Providence.—p. 195.

South Carolina Medical Association Journal, Greenville

August, XIII, No. 8

115 Hospital Standardization. J. G. Bowman, Chicago.—p. 631.
116 Medical Aspects of Social Hygiene Movement. R. S. Yarros, Chicago.—p. 637.

Wisconsin Medical Journal, Milwaukee

August, XVI, No. 3

117 Etiology of Primary Glaucoma. P. H. Dernehl, Milwaukee.—p. 79.
118 Relation of Acidosis to Edema in Pneumonia. A. B. Schwartz, Milwaukee.—p. 83.
119 Duodenal Ulcer in Infants; Report of Four Cases. W. H. Bartran, Green Bay.—p. 85.
120 Clinical Examination in Cases of Focal Infection. E. G. Nadeau. Green Bay.—p. 89.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 18, II, No. 2955

1 Part Played by British Medical Women in War. M. H. F. Ivens, —p. 203.
2 *Alleged Perils of Uric Acid. J. B. Berkart.—p. 208.
3 Acetozone as General Surgical Antiseptic. G. Gore-Gillon and R. T. Hewlett.—p. 209.
4 *Bacteriologic Examination of Blood in Cases of Irritable Heart. G. Briscoe and L. Dimond.—p. 210.
5 Two Cases of Traumatic Rupture of Spleen. J. L. Stretton.—p. 211.
6 Case of Spontaneous Rupture of Spleen; Splenectomy; Recovery. W. Rankin.—p. 211.
7 Early Treatment of Compound Fracture of Femur Caused by Gunshot Wound. R. C. Dun.—p. 212.

2. **Alleged Perils of Uric Acid.**—Berkart claims that the clinical data affords no proof whatever of any pathogenic property of uric acid; nor do the results of experimental inquiries. There is consequently no indication for an exhibition of a uric acid solvent, because that substance is readily soluble in the tissue juices and is not the cause of the symptoms observed. Not only is the use of the pretended remedies to cure the various functional derangements and organic lesions which are wrongly attributed to uric acid recommened on a baseless hypothesis, but it is mischievous also, because it allures the unwary sufferer by specious advertisements of its effectiveness to have recourse to it and continue with it until its failure is evident. Thus valuable time is lost before he submits himself to rational treatment while there is still a reasonable prospect of satisfactorily coping with his disease.

4. **Examination of Blood in Cases of Irritable Heart.**—In order to prove or disprove the correctness of the statement that organisms had been found in the blood of patients complaining of the symptoms associated with the condition known as "irritable heart," Briscoe and Dimond made ninety-six observations on forty-three cases. In no instance was any organism grown, except in the few cases which became contaminated by organisms from the air when the flask method was used. Using the methods of cultivation in general vogue the authors failed to demonstrate the presence of bacteremia in cases of "irritable heart," and conclude therefore that bacteremia does not play a demonstrable part in the pathology of this disease.

Glasgow Medical Journal

August, LXXXVIII, No. 2

8 Value of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. J. Crocket.—p. 65.
9 British Hospital Work in Serbia.—p. 77.

Indian Medical Gazette, Calcutta

July, LII, No. 7

10 New Calcutta Eye Hospital. F. P. Maynard.—p. 225.
11 King Edward VII Memorial Pasteur Institute, Shillong. R. Knowles.—p. 226.
12 Malaria. H. Willis.—p. 230.
13 Frontier Sores and Their Treatment by Antimony Injections. L. B. Scott.—p. 231.
14 Treatment of Cutaneous Leishmaniasis with Intravenous Injections of Tartar Emetic. J. A. Sinton.—p. 239.
15 Experience in Tartar Emetic Treatment of Kala-Azar Including Its Use in Young Children. L. Rogers.—p. 241.

Journal of Laryngology, Rhinology and Otology, London

August, XXXII, No. 8

16 Bony Tumor of Nasopharynx Simulated by Malposition of Cervical Vertebrae; Reposition; Great Amelioration. E. F. Cyriax.—p. 241.

Lancet, London

August 11, II, No. 4902

17 *Gunshot Wounds of Knee Joint. J. Campbell and H. F. Woolfenden.—p. 185.
18 *Irrigation and Suction Drainage for Treatment of Certain War Wounds. G. C. Sneyd.—p. 194.
19 *Thermalgia (Causalgia). J. S. B. Stopford.—p. 195.
20 Bayonet Wound of Buttock; Lung Punctured; Surgical Emphysema. J. D. Hayward.—p. 199.
21 Cervical Laminectomies. R. B. Blair.—p. 200.
22 Cultural Experiments with Meningococcus. H. W. Crowe.—p. 201.
23 "Ropy" Bread. J. M. Beattie and F. C. Lewis.—p. 211.

August 18, No. 4903

24 Meat Inspection. W. J. Howarth.—p. 225.
25 *Immediate Effect of Cigaret Smoking on Healthy Men and on Cases of "Soldier's Heart." J. Parkinson and H. Koefod.—p. 232.
26 Horseshoe Kidney by Union of Upper Poles. Diagnosed Prior to Operation. D. Newman.—p. 236.
27 Case of Claustrophobia. W. H. R. Rivers.—p. 237.
28 Perforations of Stomach and Duodenum. J. Taylor.—p. 241.
29 Problem of Tuberculosis. H. H. Thomson.—p. 251.

17. **Gunshot Wounds of Knee Joint.**—The lines along which all treatment of gunshot wounds of the knee joint is directed by Campbell and Woolfenden in septic cases are: 1. The lowering of intra-articular tension by evacuation of the exudate, thereby preventing the tracking of infection along the fascial planes. 2. The rapid overcoming of infection and the removal of infective material as soon as it is formed, thereby diminishing suppuration. 3. The promotion of the formation of adhesions, thereby limiting the area of infection and diminishing the area of the surface for toxic absorption. 4. The removal of pressure from the articular cartilage, thereby diminishing the chances of its becoming eroded. Excluding one patient whose leg was amputated for gangrene due to concomitant laceration of the popliteal vessels, and two that died, the one suffering on admission from septicemia and the other from intense and fatal anemia as the result of blood lost at the time of injury, the authors have had fifty-nine recoveries out of sixty cases, and only one amputation. The treatment in severe cases is based on three fundamentals: 1. Absolute rest and fixation. 2. The strictest asepsis. 3. The use of Carrel's method of wound treatment. With this method of treatment efficiently carried out infection is most effectually counteracted; organisms and the pabulum suitable for their growth are washed outward, even from the deepest parts of the wound; ingress of sepsis from without is prevented—to the authors' minds a most important consideration in the treatment of knee joint cases; pus only forms in small quantity; adhesions of the synovial membranes form with great readiness; the patient need only be dressed once in twenty-four or forty-eight hours.

18. **Irrigation and Suction Drainage for War Wounds.**—In wounds of a cavernous type where a large retentive septic space is present and where counterdrainage is anatomically impossible Sneyd has adopted the use of a suction apparatus to surmount the difficulty of drainage, at the same time using Carrel's tubes for irrigation. The suction apparatus is on the principle of the Sprengel pump, as advocated by Cathcart some years ago in bladder cases.

19. **Thermalgia (Causalgia).**—Since the name causalgia is liable to be misleading, Stopford suggests the substitution of the more obvious name thermalgia. This most distressing condition was described first by S. Weir Mitchell as occurring in the American Civil War. Thermalgia, as generally described, is an extreme type of many median and sciatic injuries, and to determine the etiology it is necessary to investigate all cases in which pain is the predominant and constant symptom. The clinical symptom which is constant and characteristic in all these cases is the "bursting," "throbbing," or "burning" pain in the hand or foot. The affected part is generally swollen or doughy and the temperature of the skin higher than on the normal side. Often the appearance of the hand or foot suggests the presence of deep suppuration in the palm or sole. The pain is usually persistent, intractable, and in its severest form sufficient to render the patient emotional or even to drive him to suicidal tendencies. It is made worse by heat, movement, excitement, or the dependent position, and as a result any treatment for the paralyzed muscles is impossible as long as the pain persists. The one agent which renders any relief at all from the pain, is cold, and this fails if there is a marked loss of sensibility. The associated symptoms are by no means constant and depend considerably on the number of fibers divided. In most cases they are characterized by manifestations of nerve irritation as glossy skin, hyperidrosis, hyperemia, and bone and joint changes. As a result of the arthritic changes and the inability to treat the paralyzed muscles, most distressing and unsightly deformities occur in the later stages of neglected cases.

The severe pain is the urgent symptom, but in treating this it is important to remember the pathologic condition which gives rise to it—partial division with increasing perineural and intraneural sclerosis. Since usually only a few fibers are severed the aim must be not only to relieve the pain but also to conserve the undivided fibers, and, so far as possible, diminish the sclerosis. Only operative measures can achieve this satisfactorily, and to obtain the best results they must be adopted at the earliest opportunity; in fact, as soon as the risk of sepsis can be eliminated. The essential factors in successful operative treatment appear to be: first, careful separation of all adhesions around the nerve and absolute clearing of all perineural fibrosis. Second, complete hemostasis to reduce the resultant scar as much as possible. Third, protection of the nerve at the site of injury to prevent recurrent adhesions. Fat seems to serve this purpose best, since it minimizes the risk of the formation of a thick fibrous sheath around the nerve, which so commonly follows the use of other tissues or extraneous materials. Failing to procure fat, it is best to suture the injured muscles so that no raw surfaces are exposed and only undamaged portions are in contact with the nerve.

25. **Effect of Cigaret Smoking.**—The immediate effect of cigaret smoking on the circulatory system and on the breathlessness of exertion was observed in thirty smokers, of whom twenty were cases of "soldier's heart" and ten were healthy soldiers. Each patient smoked either four or five cigarets during a period of forty minutes. Demonstrable effect was recorded in seventeen of the twenty patients; the three unaffected were noninhalers. Nine of the ten controls, all inhalers, were influenced in the same fashion, though not to the same degree. The average pulse rate among the patients during smoking was nine beats higher than before smoking; in the healthy controls it was six higher. Initial slowing of the heart was never observed, nor any irregularity referable to smoking. The rate of respiration in the patients was unaffected; in the controls it was slightly reduced. The average systolic blood pressure was raised by 5 to 10 mm. Hg, and the diastolic by 5 mm., both in patients and controls. These effects appeared within five minutes; with the first cigaret they almost reached the maximum, and this was maintained throughout the smoking period.

A simple exertion test was performed before smoking and repeated on its cessation. In the patients the pulse rate maintained a higher level throughout the test after smoking, and half of them were more breathless both subjectively and objectively. In two patients precordial pain was induced by smoking, apart from exertion. But in the controls the pulse rate curve during exertion was much the same after smoking as before, and breathlessness was induced in two only. These observations show that, in health, the smoking of a single cigaret by an habitual smoker usually raises the pulse rate and blood pressure perceptibly; and these effects are a little more pronounced in cases of "soldier's heart." Moreover, the smoking of a few cigarets can render healthy men more breathless on exertion, and manifestly does so in a large proportion of these patients. Excessive cigaret smoking is not the essential cause in most cases of "soldier's heart"; but, in the authors' opinion, it is an important contributory factor in the breathlessness and precordial pain of many of them.

Medical Journal of Australia, Sydney

July 28, II, No. 4

30 *Thirty-Three Cases of Appendicitis in Children. W. A. Wood. —p. 65.
31 Experiences in Three Hundred Cases of Parturition Treated by Scopolamin-Morphin Injection. E. B. Heffernan.—p. 68.
32 Cremation. W. G. Armstrong.—p. 70.
33 Carcinoma of Appendix. H. F. Praagst.—p. 72.
34 Enlargement of Suprarenal Glands in Fatal Case of Diabetes. W. F. Litchfield and E. M. Little.—p. 73.

30. **Appendicitis in Children.**—In the thirty-three cases of appendicitis reported by Wood there were eleven with concretions; three of these were recurrent cases and the rest were first attacks. In two cases a pencil of hard feces filled the lumen throughout its length. In others there was a hard nucleus with plastic feces adherent to it. Three cases of general peritonitis had concretions, and out of eight abscess cases seven had concretions. In six out of the eleven cases of concretions there was an acute onset, with vomiting and severe abdominal pain, which was at McBurney's point from the beginning. These were all operated on within forty-eight hours; but in three perforation had already occurred. In one case the appendix had become adherent to the cecum, which had been penetrated by the perforation and the concretion had fallen through, leaving its bed behind in the appendix. In the cases of concretion with a longer history, one patient had had a tenderness over McBurney's point for three months, and another had had dyspeptic symptoms and tenderness on deep pressure at McBurney's point and over the gallbladder for eighteen months. In the latter nothing abnormal was detected on direct palpation. In two cases there was a gangrenous appendix and perforation within forty-eight hours, with a temperature of 37.8 C. In another case general peritonitis following perforation developed within thirty-six hours, with a similar type of temperature.

In twenty cases out of the thirty there was vomiting or nausea. In three abscess cases there was no vomiting. In eleven cases there had been previous attacks. Of these, two appendixes were filled with plastic feces, two with hardened feces like a pencil, three had concretions, two were constricted by fibrous contraction, one contained free blood and was constricted by swollen mucous membrane, and one contained twenty-five thread worms, with swollen and ecchymosed mucous membrane. In two of these recurrent cases with local pains and tenderness, but no vomiting or constipation, there was complete blocking. Tenderness at McBurney's point affords the most useful sign of all for diagnostic purposes. In the early stages the leukocyte count has been of service in suggesting the presence of pus. Wood examined all the appendixes removed, and found a profuse colon bacillus growth in nearly all of the acute cases, whether they had proceeded to the pus stage or not. In the interval cases, thread worm cases, and in the normal appendixes removed in the postmortem room, there was only a scanty colon bacillus growth. When pus had formed inside the appendix, there

was often no mucous lining, but only a smooth, fibrous surface, from which it was impossible to get a smear. Most of the children's appendixes show a delta-shaped entrance to the cecum, which is closed by a valve of mucous membrane.

Archives des Maladies du Cœur, etc., Paris

July, X, No. 7, pp. 305-352

35 *Retrograde Ventricular Extrasystoles and Postextrasystolic Ventricular Automatism. (De la conductibilité cardiaque inversée.) M. Petzetakis.—p. 305.
36 The Anatomic Studies of Leonardo da Vinci. Chauvet.—p. 327.

35. **Retrograde Conductibility of the Heart.**—Petzetakis discusses whether an impulse may not be carried from the ventricle back to the auricle. Some deny the possibility of this, but he reports the details of two cases in which with total bradycardia there were unmistakable retrograde ventricular extrasystoles. One patient was a farmer-soldier of 23 with trigeminal rhythm. The tracings show how compression of the eyeball abolished the extrasystoles and slowed the rhythm, while amyl nitrite accelerated it. The other patient was a barber, and the tracings show the constancy of the auricular flutter following each extrasystole from the ventricular automatism. In the first case the extrasystoles appeared only when the man was much fatigued. In the other, the bradycardia followed an attack of dysentery, and the extrasystoles cut into the bradycardia. Neither of the men had any organic disease of the heart, and these extrasystoles were evidently of toxic or reflex origin. It is sometimes possible to arrest extrasystoles by deep breathing, confirming their nervous nature. They have also been brought on experimentally by stimulation of the cardiac nerves. Petzetakis has even induced extrasystoles by stimulation of the sciatic nerve, and has witnessed them develop from the influence of the uterus. Last December he reported that he had succeeded in inducing retrograde ventricular extrasystoles in dogs with bradycardia. The data presented thus demonstrate that cardial conductibility is reversible, but, he adds, it is nothing new that an irreversible phenomenon may be composed of elements individually reversible.

Bulletin de l'Académie de Médecine, Paris

July 31, LXXVIII, No. 30, pp. 89-106

37 Cereals to Take the Place of Wheat. E. Maurel.—p. 89.
38 Pyopneumothorax as Consequence of Poisoning from Asphyxiating Gases. L. Lyon-Caen and Kuss.—p. 96.
39 Graduated Farm Labor in Systematic Treatment of Stiff Joints and Muscular Contracture after War Wounds. H. Guilleminot. —p. 97.
40 *Receiving Cap for Telephone and Wireless Telegraph Operators. H. Bauvallet.—p. 101.
41 *Tests for Apparent Death. A. Terson.—p. 103.

40. **Receiving Cap for Telephone and Wireless Telegraph Operators.**—Bauvallet's model cap is held in place by pressure from front to rear, like the head mirror of the nose and throat men, and there is no strong pressure from side to side. Each receiver has a soft circular pad which fits gently over the ear but closes it hermetically. There is also a soft pad to protect the brow. The wires can be arranged below the chin to form a band which aids in holding the cap in place. The ear pads are removable, to permit sterilization and individual use. A number of other innovations are described, Bauvallet having tested on himself the caps at present in use and having become convinced that from the medical standpoint there was great room for improvement.

41. **Signs of Apparent Death.**—Terson expatiates on the important information to be derived from the eye in regard to the manner of death and whether there is still a spark of life in the body. He says that the assumption that the pupils do not show any reaction after death is a mistake. There is no or very slight reaction to light, but the action of mydriatics and miotics and the action of electricity is almost always still pronounced although variable as to intensity and duration. In some cadavers these reactions can be elicited up to five or six hours after death; in others they are scarcely perceptible. With eserin he was able to induce violent contraction of the pupil, lasting for twenty minutes, in the cadaver of an elderly man who had been dead for four hours, while similar tests the same day in a young man who had been dead for only two hours elicited a scarcely perceptible response. The pupil is the last of all to die, and while it may be immovable in certain living persons, it may persist movable for some time under different reagents in certain cadavers. Hence examination of the pupil is not decisive. On the other hand, the circulation reactions are absolutely dependable. Injection of fluorescein does not always induce in the human eye as lively a change of tint as in animals. Its effect should be studied elsewhere as well as in the eye. Application of the actual cautery, or of copper sulphate, and instillation or injection of salt solution under the conjunctiva do not induce any irritation on the warm cadaver two hours after death. More instructive still is a test with pulverized dionin. This, he recalls, is the proprietary name given by the Germans to the codethylin or ethyl morphin discovered by Grimaux in 1882. It dissolves rapidly in glycerin, and when applied to the eye in a 33 per cent. solution in glycerin it induces smarting, a purplish red congestion and chemotic swelling of the conjunctiva of the eyeball, and all this without any actual injury or accident at the time or later. Terson urges that this simple reaction should be applied at the slightest doubt whether the death is real or only apparent. In the numerous conditions which so deceptively simulate death, the ocular criteria should never be neglected. Their confirming evidence dissipates the last doubt, and even applied alone their testimony may prove convincing.

Journal de Radiologie et d'Electrologie, Paris

May-June, II, No. 9, pp. 545-592

42 Radiographic Aspect of Gangrenous Lesions, Especially Gas Gangrene. G. Lardennois and Pech.—p. 545.
43 Radiologic Equipment for the Army. Aubourg and Barret.—p. 548.
44 Operating under Screen Control. (Les méthodes radio-chirurgicales.) R. Ledoux-Lebard.—p. 552.
45 *Radiotherapy for War Wounds. Réchou.—p. 557.
46 Necessity for Having Only Physicians as Chiefs of Radiologic Services. M. Béclère.—p. 564.
47 *Let the Radiologist Select his Methods for his Diagnosis. Barret and Aubourg.—p. 567.
48 The Rôle and the Results of Roentgenology in the Diagnosis of Pulmonary Tuberculosis in Soldiers. Delherm and L. Kindberg. —p. 572.

45. **Radiotherapy of War Wounds.**—Réchou expatiates on the efficacy of the Roentgen rays in modifying the fibrous connective tissue which forms around nerves after a war wound, facilitating the absorption of the newly formed exogenous sclerosis, as Hesnard calls it. This connective tissue proliferating around the nerve binds it to adjacent organs and mischief follows. The rays seem to disintegrate this newly formed tissue while the nerve tissue does not seem to be influenced by the rays in doses just sufficient to accomplish this. He has found most effectual a monthly large dose, 10 or 12 H units, under an aluminum filter, with cross fire application when possible. He reports the details of seven cases in which the neuroma, contracture of the biceps and of the fingers and the reaction of degeneration and atrophy of the muscles all subsided in two or three months or were materially improved. In a group of five other cases the cicatrix after a war wound was adherent and interfered with functioning. The use of the limb was regained more or less completely after a few exposures. Cheloid and painful cicatrix were also favorably modified. Neuritis and even ankylosis may show marked improvement. In the discussion that followed, Beaujard reported over 66 per cent. cured and over 23 improved in ninety-three cases of crippling or painful wounds and all but 20 per cent. cured or improved in fifteen cases of troublesome neuromas, while all were cured of the ten patients with typical causalgia. All but 21.5 per cent. were cured or improved in fourteen cases of cicatricial compression of a nerve and in both of the two cases in which the spinal cord was thus compressed. Laquerrière emphasizes the fine results obtained in a number of cases of infiltration and inflammation of tendon sheaths, also as an adjuvant in old hydrarthrosis. The speakers emphasized that their remarks applied exclusively to war conditions, and that the rays were most effectual with young cicatricial tissue.

47. **Radioscopy and Radiology.**—Barret and Aubourg comment on the advisability of leaving to the radiologist the choice of the method of examination. His task is the radiodiagnosis, and how best to obtain this should be left to him. Radioscopy is the preferable technic for it in most cases and the prevailing abuse of radiography is extravagant. Among the cases cited to demonstrate the correctness of these statements is one of a scrap of shell in the forearm. A radiogram had been taken from the front and side, the fingers extended, but the surgeon at four separate operations was unable to find the scrap. Examination with the screen showed that when the fingers were flexed the scrap moved up 34 mm. Under the influence of the anesthetic the fingers became flexed.

Paris Médical

August 4, VII, No. 31, pp. 93-128

49 *Atropin and Amyl Nitrite Test in Bradycardia. O. Josué and F. Belloir.—p. 93.
50 *Heart Murmurs. C. Laubry.—p. 99.
51 Anemia in Primary Malaria. G. Paisseau and H. Lemaire.—p. 103.
52 *The Systolic Blood Pressure in Arm and Leg with Aortic Insufficiency. J. Heitz.—p. 112.
53 *The Abdominocardiac and Oculocardiac Reflexes. L. Pron.—p. 122.
54 Rapid, Extemporaneous Technic for Transfusion of Blood. G. Rosenthal.—p. 125.

49. **Atropin and Amyl Nitrite Tests with Bradycardia.**—Josué and Belloir state that as these drugs temporarily arrest the cardio-inhibiting action of the pneumogastric, they throw light on the clinical physiology of the heart action in case of abnormally slow functioning. The action of amyl nitrite is quicker, more constant and stronger than that of atropin. A positive response, namely, acceleration of the pulse, does not imply that the bradycardia is the result of excitation of the pneumogastric but only that the vagus still retains its normal tonic action on the myocardium. In fact, both atropin and amyl nitrite act on the normal heart. This point is very important. However, the cases of bradycardia giving a clearly positive reaction are as a rule total bradycardias determined by the excitation of the vagus; only exceptionally are they the result of dissociation between the auricles and ventricle from the same cause. The tonic action of the vagus may be still retained even when the bradycardia is the result of toxic myocardiac trouble. In this case the test may prove positive even although the myocardium is responsible for the bradycardia. The cases of bradycardia in which the tests are negative are those for which the myocardium is responsible. As a rule the bradycardia in such cases is from heart block. Negative responses occur likewise in bradycardia from toxic influences acting on the myocardium, as for example under digitalis. In the cases of bradycardia with complete dissociation between the auricle and ventricle, these drug tests sometimes determine a slightly faster action of the ventricles, indicating the persistence of the connection of the pneumogastric with the ventricles. When there is no nervous or muscular connection and the ventricles contract with an invariable idioventricular rhythm, there is absolutely no response to these drug tests. In conclusion they warn that the information supplied by atropin and amyl nitrite with bradycardia is interesting but not absolutely conclusive, certain points being still open to discussion.

50. **Heart Murmurs.**—Laubry's remarks are addressed to the practitioner, not the specialist. He reiterates that the special moment during the heart cycle at which the murmur appears, and its duration, are the main points for estimation of its clinical significance. The important thing is to locate the murmur in time rather than in space; its seat is of less moment. Vaquez declares that the heart should never be examined first with the stethoscope; this should be reserved till later to determine the exact point where the murmur sounds loudest. The first phase should be determined not by the pulse but by the tactile sensation of the apex beat which accompanies the sound. When a diastolic murmur commences with the second phase or immediately afterward, finishes immediately before the first phase, and fills the whole of the long pause, it is always organic; it occurs only with aortic insufficiency. With mitral insufficiency, the sound is a rumbling, not a murmur. When the murmur occupies the entire systole, commencing with the first phase and stopping with the second, it is always a sign of valvular disease, but if there is even a brief space free from it at the middle or end of the short pause, then the murmur can be recognized as not only inorganic but it can be located outside of the heart, in the precardiac sheet of the lung. If the free interval is at the beginning of the short pause, then it may be organic, notwithstanding the integrity of the first sound. A murmur of inorganic origin may be encountered with tachycardia, in which case exact localization in time is out of the question. The site of the murmur is of little importance with a diastolic murmur but is important with the systolic. In the region of the base and of the middle of the heart, at about the third interspace and the fourth rib, every dubious murmur not decidedly filling the entire pause may be regarded as inorganic, as also every murmur at the base not followed by a diastolic murmur. In the apex region, if there is any doubt, prolonged repose, influence of change of position or of pressure on the eyeball may modify conditions so that the murmur may be better understood. Of course the above applies only to dubious murmurs. With actual organic disease there is no chance for doubt. The practitioner should practice to locate the murmur at its special point in the time cycle. When certain of this, he can fit the knowledge thus gained into the whole train of symptoms and the history of the case, and all may become clear. The murmur symptom should be analyzed first of all.

52. **The Systolic Blood Pressure in Arm and Leg with Aortic Incompetency.**—Heitz reviews the literature and his findings in fifty-one subjects, the tabulated data filling six pages. The systolic pressure seems to be higher in the tibial arteries as a rule with aortic incompetency or aortic lesion of any kind, but the diastolic is not modified. The patients were reclining at the time.

53. **The Abdominocardiac Reflex.**—Pron tabulates the details of fifty cases in which he recorded the difference between the pulse rate as the subject stood erect or reclined. The sliding down of the viscera, the intestines and the stomach in particular, as the subject stands, drags on the gastric ramifications of the pneumogastric, and by reflex action accelerates the pulse. This abdominocardiac reflex thus signifies abdominal ptosis, complete or partial, but its effect is magnified by any existing nervous irritability. The practical conclusion of his research is that the pulse should be counted always with the subject reclining; if he is standing the pulse may be pathologic even when the cardiovascular system is intact. Another practical point is that persons inclined to ptosis should wear a supporting band to ward off such traction on the gastric nerve ramifications. The supporting band must always be below the stomach, to push it up. Sometimes a little pad of flannel or cotton, fastened to the belt or worn just above the belt may answer the purpose. Study of the abdominocardiac reflex also emphasizes the importance for dyspeptics of reclining after meals to relieve them of the dragging down from the weight of the food. Also that persons inclined to defective digestion should avoid the erect position as much as possible at all times.

Presse Médicale, Paris

July 5, XXIV, No. 37, pp. 377-384

55 *Spirochete and Mycosis Bronchitis Sometimes Simulating Pulmonary Tuberculosis. A. Castellani.—p. 377.
56 Case of Chronic Congenital Edema of Right Arm. L. Rimbaud and H. Roger.—p. 380.
57 Extraction of Projectiles under Screen Control. A. Lapointe.—p. 381.

55. **Bronchial Spirochetosis.**—Castellani is professor of tropical diseases at the University of Rome. He here states that in a soldiers' sanatorium in northern Italy he noticed that over 3 per cent. of those sent there with the diagnosis of pulmonary tuberculosis in reality had merely a mycosis or spirochetosis affecting the bronchi. He called attention to this bronchospirochetosis in 1905, and his statements have been confirmed since by others in the Philippines, Soudan, Switzerland and elsewhere. Chalmers and O'Ferral reproducing it in monkeys by intratracheal injection of a patient's

sputum. The chronic form can usually be differentiated from pulmonary tuberculosis only by the microscope. The prognosis is generally favorable in the acute forms, but when it runs into a chronic course it may last indefinitely although with occasional remissions. Arsenic is the main reliance in treatment and lately he has been combining tartar emetic with it. He prescribes the latter as 0.10 or 0.20 gm. tartar emetic, with 50 gm. syrup of tolu, and 100 gm. chloroform water to counteract the emetic action of the tartrate. The patient takes a tablespoonful in water four or six times a day. Castellani describes further the various forms of mycosis affecting the bronchi, tabulating twenty different hyphomycetes he has isolated, all belonging to the monilia type, and others of the oidium and hemispora types. In all these forms of mycosis there may be symptoms merely of a mild bronchitis or they may suggest pulmonary tuberculosis. Iodids are useful in treatment, but they do not ward off the fatal termination in the malignant cases. It has seemed sometimes that the iodids (2 or 4 gm. a day of potassium or sodium iodid) were more effectual if salt was restricted in the diet. Pinoy called attention to this with dermatomycoses. The microscope is the only means of differentiation.

Revue de Chirurgie, Paris

January-February, XXXVI, No. 1-2, pp. 1-240

58 *Is the Carrel Technic Applicable in the Base Hospitals? M. Guillot and H. Woimant.—p. 1.
59 *Amebic Liver Abscess Treated with Emetin Alone. P. Brocq and A. Augé.—p. 21.
60 *Inability to Rotate the Forearm after Fracture. F. Masmonteil. —p. 38.
61 *War Wounds of Foot and Ankle. E. Quénu.—p. 89. Continuation.
62 Aneurysm Involving Internal Carotid Artery and Internal Jugular Sinus at the Base of the Skull. M. Patel and M. Lannois.—p. 217.
63 *Oblique Anastomosis of Ureter Stumps. A. L. Soresi (New York). —p. 226.
64 Dry Wounds of Large Vessels. F. Perrenot.—p. 232.

58. **The Carrel Method as Applied in Base Hospitals.**—Guillot and Woimant report from the Rockefeller Institute at Compiègne that their experience with thirty-four wounded men confirms that old wounds respond on the whole like recent wounds to the Carrel method of sterilization and early suture. The only problem is to ensure that the antiseptic laves all the parts of the wound. It is necessary for this to clear out all infected tissues, and these complete operations on infected wounds, especially where there is fracture, are dangerous. The bacteriologic control shows that in an infected fracture case the microbes proliferate enormously after any operation on the focus, running up in a few hours from ten to uncountable numbers. Hence ample disinfection must be applied as a preliminary to the completing operation. By this means conditions are improved so that the focus can be thoroughly cleared out with comparatively little danger, and the wound then be treated as if it were a fresh wound. Each of these four phases, disinfection, operation, sterilization and suture, is done strictly under the guidance of bacteriologic control. The criterion for safety in the final suturing of the wound is one bacterium per three microscopic fields. They close with a recapitulation of the exact details of Carrel's technic and for the preparation of Dakin's fluid.

59. **Amebic Suppuration in the Liver Cured with Emetin Alone.**—Brocq and Augé report three new cases which emphasize anew the remarkable results that can be anticipated from subcutaneous injection of emetin alone, rendering surgical measures unnecessary. One of the men had acute hepatitis, the general condition so grave that no operation could be attempted, and the benefit under the emetin amounted to an actual resurrection. The improvement became evident the third day. Two doses of 0.02 gm. were injected daily for three days, then 0.04 gm. the fourth and fifth days, then 0.02 gm., gradually reducing the dose. The total given was 0.44 gm. in twelve days. The amebic infection was of eight years' standing. In the second case the diagnosis wavered between abscess of the liver and suppurating gallbladder disease, but an exploratory laparotomy revealed the large abscess in the liver. They did not attempt to evacuate it but gave 0.32 gm. emetin in the first twelve days and the same amount in a second series of injections after a week's suspension. The third case shows that unless the course of emetin is prolonged long enough or repeated often enough the suppuration in the liver is liable to return. It is not enough to cure the liver lesion; the patient must be radically freed from the ameba.

60. **Inability to Rotate the Forearm after Fracture.**—Masmonteil discusses the mechanical principles involved in the limitation or complete suppression of rotation of the forearm after fracture, and how to prevent and cure it.

61. **Wounds of Foot and Ankle.**—In this instalment of Quénu's monograph he discusses treatment of recent and old wounds of foot and ankle, the cases cited in illustration bearing the numbers 173 to 243. By analysis of the mechanism of the unphysiologic functioning after healing, he seeks guidance for treatment of such injuries.

63. **Anastomosis of Ureter Stumps.**—Soresi is serving with the Italian army at present, and he here gives an illustrated description of a simple method of suturing the ureter stumps which leaves no possibility for narrowing the lumen. The primary transverse section is transformed into an ellipsoidal anastomosis, placed slanting. This shortens the ureter by 1 cm. He slits each stump for about 1 mm. longer than the diameter of the stump, and sutures the rear straight edge of each stump together. Then the circular edge of the right stump is sutured to the straight edge of the left stump and the suture is continued right along, joining the front straight edge of the right stump to the circular edge of the left. By this means is obtained a long slanting suture with the ureter bulging roundly at each side. The diameter of the ureter is thus materially enlarged at this point. A roentgenogram of a dog eleven months after an operation of this kind shows the ureter considerably enlarged at the anastomosis with no dilatation above.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 28, XLVII, No. 30, pp. 961-992

65 Operation versus Radiotherapy for Uterine Cancer. A. Labhardt. —p. 961.
66 *The Alleged Titration of Digitalis on Frogs. T. A. Redonnet (Madrid).—p. 974.

August 11, No. 32, pp. 1025-1056

67 *Dosage of Bromids in Epilepsy and Melancholia. E. Bernoulli. —p. 1025.
68 Importance for Man of Bovine Tubercle Bacilli. S. F. von Wolfring.—p. 1036.

66. **The Alleged Titration of Digitalis.**—Redonnet writes from the Pharmacologic Institute at Zurich to comment on the difference frequently observed between the action of digitalis preparations in the clinic and that which should be anticipated from the titrated values. Tests on the frog heart gave varying results with preparations of digitalis of different origins and dissolved in different mediums. Different results were obtained at will by varying the vehicle, the concentration and the other ingredients of the preparation. Clinical experience further shows that titration values obtained with the frog heart do not have identical values in man. In short, he declares, frog heart titration is useless and misleading. Quantitative dosage should alone prevail, and the physician should master the dosage for some one preparation and not change about. His own experience is the best teacher, and he will thus overcome the confusion with which the frog method has shrouded the use of digitalis. He reiterates that digitalis is the opium or the quinin of the heart just according to the dosage.

67. **Dosage of the Bromids.**—Bernoulli refers to the increasing use of the bromids in treatment of melancholia and similar conditions, saying that this enlarging of the indications renders careful dosage imperative. This treatment has proved particularly useful in the hands of Ulrich (as mentioned in these columns July 1, 1916, p. 81). He aims to get the patient under the influence of the bromids to an extent equivalent to the first phase of a bromid narcosis, but emphasizes the necessity for exact estimation of the degree of brominization. When there is large intake of salt, the bromid has comparatively little action. By giving the two in certain relative

proportions, a balance is obtained in the body in time, corresponding to the balance between them in the dosage. The promptness with which this balance is attained depends on the five factors, the intake of bromids, of salt, the elimination of each and the salt content of the body. Bernoulli compares it to a tub of cold water into which hot and cold water are running. The heat of the water is determined by the amount of hot water that displaces the cold in the tub, and the degree of brominization by the fraction of the body chlorin which has been molecularly substituted by bromin. This is the relative bromin content of the body and it can be determined by a single analysis of the blood. Individuals differ widely; he found 1.2 gm. chlorin per kilogram body weight in two thin persons and from 1.13 to 1.57 gm. in fourteen rabbits. When this is once established, then further control can be kept up by determining the chlorin content of the urine; the variations in this seem to give dependable information as to variations in the chlorin-bromin balance, although there may be a wide difference between the content in blood and urine. In severe cases of epilepsy, enough bromids must be given to bring the relative bromin content of the blood up to 20 or 25 per cent. or even 30 per cent. In the urine the corresponding relative content would be from 15 to 25 per cent. The diet must be salt-poor, reduced to from 5 to 15 gm. salt per day. It is not necessary to drop salt altogether. The chlorin content of the urine also permits control of the intake. Only when we know the exact amount of chlorid being ingested can we estimate the proper dose of the bromid. He gives a table showing the exact amounts of sodium bromid that should be given with given amounts of salt to realize a 15, 20, 25 or 30 per cent. relative bromin content of the urine. When the patient is getting 5 gm. of sodium chlorid per day, the sodium bromid dose should be respectively, 1.6, 2.2, 3 and 3.8 gm. With 10 gm. sodium chlorid, the figures are 3.1, 4.4, 5.9 and 7.5 gm. With 15 gm. sodium chlorid, 4.7, 6.6, 8.8 and 11.3 gm. If potassium bromid is used instead of sodium bromid, the dose should be increased by 15 per cent. above these figures. A chart marked off in fifteen vertical and twenty horizontal squares shows the dosage with precision, the vertical squares representing the sodium bromid and the horizontal the sodium chlorid. Starting at the left, lower zero corner, straight lines are drawn slanting up to the right. One drawn from zero to the upper right corner represents a 30 per cent. relative bromin content of the urine. A second line from zero to the twelfth vertical square, at the right, represents 25 per cent.; to the ninth right vertical square, 20 per cent., and to a point just above the sixth right vertical square, 15 per cent. Seven case reports are given in detail, with the chart of one. He reiterates that it is the combination of sodium chlorid and sodium bromid that is effectual, neither alone, and only their proper combination.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 1, XXXVIII, No. 52, pp. 737-752

69 Fatal Tetragenus Sepsis. C. Rubino.—p. 739.

July 5, No. 53, pp. 753-760

70 Surgical Complications of Scarlet Fever. F. Bindi.—p. 755.
71 Reform of Midwife System. E. Villa.—p. 759.

July 12, No. 55, pp. 777-784

72 Epidemic of Neuritis with Scurvy in Troops on Active Service. M. E. Ferrari.—p. 778.

July 15, No. 56, pp. 785-800

73 *Pain and Other Disturbances from War Wounds of the Arm. (Sinestesalgia.) L. Corridi.—p. 786.

July 19, No. 57, pp. 801-808

74 *Eye Complications of Scarlet Fever. Tito di Giuseppe.—p. 803.

73. Nervous Disturbances after War Wounds of the Arm.—In the three cases described there were two sets of symptoms, one evidently due to neuritis from compression and the other to injury of the sympathetic innervation. The median nerve was the main trunk involved. In order to act on both sets of symptoms, two operations were indicated: neurolysis to free the nerve from the compression and Leriche's method of excision of the perivascular sheath of the artery. The symptoms corresponded to Weir Mitchell's causalgia, but Corridi prefers to call it sinestesalgia. The sharp neuralgic pains appeared soon after the injury while the pains of the causalgia syndrome did not appear until days later and it developed gradually. The neuralgic pains, the motor disturbances and the muscular trophism were all improved at once by the neurolysis, but the causalgia persisted unmodified.

74. The Eye Lesions of Scarlet Fever.—In an extensive epidemic of scarlet fever in the Chieta province in Italy, ten cases were encountered in which there were complications on the part of the eyes. In a population of 30,000, there were 2,000 cases of scarlet fever between September, 1916, and March, 1917, with 200 deaths. The eye complications included four cases of corneal ulcer, two of iritis, and four of panophthalmia, all of which developed during the course of the disease. In one child the corneal ulceration entailed the loss of the aqueous humor and the child died the twelfth day. In another the ulcer developed the fourth day of the disease, which otherwise was mild. Keratoconus was left but there was no otitis or phlegmon. The third child had multiple corneal ulcers develop about the eighth day of the disease, and the child was left blind. There was evidently primary thrombus formation as occurred elsewhere in a number of other cases, obstructing the femoral in one case and compelling amputation, while one young woman developed paralysis in one arm. In the fourth case of corneal ulceration the same mechanism was involved, the circulation in the cornea suffering but the ulcer healed, leaving merely a small leukoma which did not interfere materially with vision. The iritis cases were less severe, pain and photophobia being the symptoms, with mydriasis and some exudation in the eye affected, but the whole subsided in one case under atropin. In the other case the eye was finally enucleated on account of complications. The trouble in these cases was not from interference with the circulation but was probably of toxic origin. Two of the four cases of panophthalmia were in a young mother and her child, both dying. The throat, ears and eyes were all affected, the corneas ulcerating. The other two cases of panophthalmia also proved fatal, one eye having been enucleated without arresting the process. The child succumbed to scarlatinal nephritis, the other to cachexia from multiple abscesses in ears, legs and neck. Both parotids suppurated also. The onset of the ophthalmia was stormy, the eye actually liquefying within a few days. It was noticed in this epidemic that no patient ever recovered that had presented bilateral mydriasis with pericorneal injection. Patients exhibiting this symptom (without signs of meningitis), apparently in good general condition, the pulse, respiration, heart, kidneys, etc., apparently in good order, rapidly succumbed without presenting any other lesions, the heart failing. This mydriasis is probably due to lesions in the sympathetic system, or in the suprarenals first and in the sympathetic secondarily. The toxic action responsible for it must have been very virulent as all such patients died within twenty-four or forty-eight hours after the mydriasis was noted.

Pediatria, Naples

August, XXV, No. 8, pp. 449-512

75 *Tartar Emetic in Treatment of Infantile Kala-Azar. A. Longo. —p. 449.
76 *Disease of Respiratory Apparatus in Infants Brought to Welfare Station. M. la Ferla.—p. 469.
77 Importance of Radioscopy in Infantile Scurvy. (Malattia di Barlow.) U. Provinciali.—p. 481.

75. Tartar Emetic in Leishmaniosis in Children.—Longo says that the most optimistic statistics mention only 10 per cent. recoveries among children with infantile kala-azar, and in his region, Catania, the proportion is only 4 per cent. This renders particularly noticeable his seventeen completely cured children among twenty given a thorough course of intravenous treatment with antimony and potassium tartrate, with no signs of recurrence during the three months or more since. He started the treatment in a total of forty-three cases, and an additional series of twelve are still taking the course. In the cured cases the children have been free from fever for three months at least and the spleen has subsided almost to or behind the costal arch. Even including the others of the forty-three who did not complete the course, the record is

41 per cent. recoveries. During the tentative period of treatment, three of the children showed symptoms of antimony poisoning, but none have been noted during the year since the doses were reduced. In two cases the course had been irregular and interrupted for periods up to eleven months. When the drug was given later during a recurrence, the germs seemed to have been rendered tartrate-fast, by the irregular and interrupted technic. The leishmania seemed to have been mithridatized against the drug, as no effect on it from the drug could be detected unless possibly an aggravating influence. These children were 14 months and over 4 years old and the disease was of one and five months' standing. They were given a total of 1.05 and 1.4 gm. of the drug in twenty-two and thirty-one injections. One girl of 3 threw off the kala-azar completely after two injections in the course of four days, and a total of only 0.08 gm. of the tartrate. A number of the children were withdrawn from treatment on account of the mothers' dread of the intravenous technic. Others died from an intercurrent acute infectious disease. The attempts at rectal and intramuscular injection had to be suspended as proving less effectual than the intravenous method. In conclusion, Longo gives the details of six cases in which he gave the tartar emetic by the mouth. The stomach does not stand the drug well, and only four of his six patients were able to keep up the course. There was no apparent effect from it in one child, who showed no benefit likewise from the drug by intravenous injection. In another the course was interrupted by whooping cough, but the two others were apparently promptly cured by the drug, taking a total of 0.59 and 0.63 gm. The daily dose was about 0.03 or 0.04 gm. and often about a quarter of it was vomited. This recovery of two out of four under oral administration of tartar emetic is promising. These children were 16 months and 3 years old, and the disease was of five and six months' standing.

76. **Respiratory Affections in Infants.**—La Ferla has been investigating parallel series of infants living at home and living in institutions, in order to determine the comparative prevalence of affections of the respiratory tract among them. The findings show that infants living at home and brought regularly to the welfare stations are less subject to affections of the respiratory organs, and they are less severe when they develop, than in corresponding series of infants in institutions. The dispensary "consultations" babies thrived better and threw off their respiratory trouble more quickly than the babies taken into the hospital. Of the 271 infants in question, only one fifth lost much weight during the respiratory affections. The children brought to the consultations averaged about three affections of the respiratory tract during the year.

Policlinico, Rome

August 5, XXIV, No. 32, pp. 977-1004

78 Trench Nephritis. F. Giugni.—p. 977.
79 Nephritis in Troops on Active Service. T. Silvestri.—p. 986.
80 Approximate Dosage of Albumin in the Urine. A. Angiolani.—p. 989.

August 12, No. 33, pp. 1005-1032

81 *Inhalation of Ether in Treatment of Mutism, Dysphonia and Tachypnea of Hysteric Origin. E. Trocello.—p. 1005.
82 Fracture of the Greater Trochanter. (Frattura parcellare da strappamento del grande trocantere.) L. G. Gazzotti.—p. 1012.

August, Medical Section No. 8, pp. 309-348

83 *Tertiary Syphilis of the Liver. A. Furno.—p. 309.
84 Improved Color Tests for Quinin. D. Ganassini.—p. 344.

81. **Ether in Treatment of Hysteric Aphonia and Mutism.**—Trocello reports two cases which sustain his plea for a trial of ether in all cases of hysteric mutism, aphonia or dysphonia. Simple inhalation of 20 c.c. of ether in the home cured the complete mutism in the first patient, a woman of 26. It had come on suddenly with a sensation of severe constriction back of the sternum, tachypnea and hiccup, during a period of debility from severe metrorrhagia and emotional stress. The woman had never presented appreciable symptoms of hysteria before. The same violent sensation of retrosternal constriction preceded the aphonia also in the second case, the patient a soldier. The ether treatment failed in this case. Others have called attention to the difference between the effect in mutism and dysphonia, the former being much more amenable. Trocello thinks there can be no doubt that there is some connection between the retrosternal sensation of violent constriction and the vocal disturbances.

83. **Tertiary Manifestations of Syphilis in the Liver.**—Furno reports in detail five cases of syphilitic disease of the liver, and compares them with similar cases in the literature. The first presented typical syphilitic diabetes of liver origin. He has been able to find on record only one other case in which the syphilitic diabetes was due exclusively to the liver. The enlarged liver and the pronounced and persisting glycosuria in his case both subsided under treatment for syphilis, the glycosuria promptly disappearing as the liver returned to normal size. There was nothing to indicate disease of the pancreas or a nervous origin for the glycosuria. It disappeared after two injections of calomel in the course of two weeks. In another case the stormy onset was supposed to be liver colic. The temperature rose but then dropped to normal but rose again later. Furno assumes that the colic was responsible for the fever at first and later the specific treatment. In other cases also the temperature rose each time after intravenous injection of salvarsan. The rise in temperature sems to be due to the action of the drug on the specific disease and is not merely a febrile reaction. The temperature and other conditions grew worse under a mild mercurial and iodid course of treatment in three of the cases reported. He regards this as instructive, as showing, first, that the fever is actually the work of the syphilitic process, and, secondly, that the process is not chronic but subacute, and in this way it serves to differentiate syphilitic from other forms of liver disease. Thirdly, it explains the origin of syphilitic fever. In all the five cases, specific treatment was followed by prompt subsidence of the enlarged liver, always accompanied with fever. There was no fever when the liver subsided in size from other causes than specific treatment. In one case in which for two weeks the true diagnosis had not been made, the enlarged liver had materially subsided under repose, dieting and measures to stimulate production of bile, but there was no fever during this period. Most writers assume that the fever is the result of absorption of the necrotic products of the gumma, but the behavior of the fever in these cases indicates rather that the heat-regulating nerve centers are irritated by the toxic products elaborated in syphilitic liver tissue. Carcinoma and sarcoma are generally afebrile when located elsewhere than in the liver. In his cases the pain in the liver region became much more intense under specific treatment, and there was also vomiting at the onset of the liver trouble and on beginning specific treatment. Hiller has reported a case of liver syphilis with vomiting of blood. There was little if any tendency to jaundice in Furno's cases. This is more common with secondary syphilitic disease of the liver. Any confusion with Banti's disease is out of the question if we remember Banti's words that malaria, syphilis and tuberculosis must all be excluded before accepting this diagnosis. The fever following specific treatment also aids in excluding Banti's disease, as mercury iodid treatment in this disease has not been known to induce fever. There was pronounced leukopeny in all of Furno's five cases. In one intense headache and pain back of the sternum and in the liver were the predominant symptoms. One woman of 34 had had diffuse myalgia for six weeks with chills, fever and enlargement of liver and spleen, while another woman of 54 had had pains in the bones for a few months, with intense headache, oppression and pains in the right abdomen radiating to the arm, with some fever. On account of slight albuminuria she had been treated for uric-acidemia but the condition grew constantly worse, with uncontrollable vomiting, abdominal pain and uremic manifestations. Under specific treatment prompt improvement was realized but it proved impossible to get the liver back quite to normal proportions.

Riforma Medica, Naples

July 28, XXXIII, No. 30, pp. 749-768

85 Diagnosis of Tuberculosis in Soldiers. E. Maragliano.—p. 749.
86 Malaria in Soldiers. D. Cesa-Bianchi.—p. 752.
87 Simulated or Factitious Talipes. A. Mori.—p. 755. Commenced in No. 29, p. 729.

Brazil-Medico, Rio de Janeiro

July 7, XXXI, No. 27, pp. 225-232

88 Presumptive Diagnosis of Pellagra with Consecutive Polyneuritis in Man of Thirty-Two. C. de Rezende.—p. 225.

Cronica Medica, Lima, Peru

July, XXXIV, No. 649, pp. 221-268

89 The Etiologic Factors of Mental Disease through the History of Peru. H. Valdizan.—p. 221.

90 *The Fibrous Form of Pulmonary Tuberculosis. A. Corvetto.—p. 236.

91 Present Status of Vaccination against Typhoid. C. A. Bambaren.—p. 243.

90. **Dense Fibrous Form of Pulmonary Tuberculosis.**—Corvetto's cases of this type began very slowly and insidiously and hemoptysis was the most constant symptom, coming on at any stage of the disease. It is not formed of pure blood; a hemorrhagic pneumonia is responsible for it, not an ulceration. The diaphragm is higher on the side affected. The general condition may keep good for a long time; one of his patients showed little disturbance for ten years, but the disease progresses inexorably to a fatal termination in time. This can be postponed by hygiene and avoidance of fatigue and other harmful factors. Such patients are usually between 40 and 60, but the young do not escape. The heart becomes compromised comparatively early, and everything that strains the heart must be avoided. A mild, sheltered climate is better than altitude for the older patients. There is little if any fever with this dense fibrous type. Tuberculin has done more harm than good in these cases in his experience, and artificial pneumothorax has little prospect of success. This should be reserved for the rapidly spreading forms of tuberculosis, especially the unilateral. The dense fibrous type usually affects both lungs.

Revista de Medicina y Cirugia, Havana

August, XXII, No. 10, pp. 373-422

92 Celebration of Santos Fernandez' Seventieth Birthday. J. P. Arteaga.—p. 373. Mentioned in THE JOURNAL, August 25, p. 660.

Hospitalstidende, Copenhagen

July 11, LX, No. 28, pp. 669-692

93 Heart Block in Upper Portion of His-Tawara Bundle; Four Cases. V. C. E. Petersen.—p. 669.

July 18, No. 29, pp. 693-716

94 *Status Epilepticus in the Pregnant. V. Albeck.—p. 693.

95 *Spontaneous Rupture of the Rectum. E. Henningsen.—p. 702.

94. **Status Epilepticus in the Pregnant.**—Albeck's experience has convinced him that status epilepticus in pregnant or parturient women is not so exceptional as would appear from the records, but it is often mistaken for eclampsia. Differentiation is particularly difficult when the epileptic seizures are accompanied by albuminuria and edema, as in his three cases. The fact that the patient is known to be an epileptic or that the convulsions have recurred at previous pregnancies, speaks for the epileptic nature of the trouble, as eclampsia, he says, so good as never occurs twice in the same individual. The blood pressure may also aid in differentiation; a normal or nearly normal blood pressure is not found in eclampsia. In five cases on record of status epilepticus in pregnant or parturient women all terminated fatally, but Jardine has reported a case at the eighth month and the woman recovered after cesarean section. Albeck systematically interrupted the pregnancy in his three cases, by instrumental dilatation or cesarean section, and all the women recovered. He thinks that a latent or frank tendency to epilepsy is roused by some pregnancy intoxication. He has had 151 cases of what he calls eclampsism among 3,000 pregnant women; in one case it was pronounced in an epileptic woman for a few weeks before delivery but yet status epilepticus did not develop, and a living child was delivered by section at term. This patient had been given potassium bromid regularly from the first symptoms. None of the women thus treated developed status epilepticus, but when it was already installed, he did not venture to allow the pregnancy to continue but interrupted it at once. The outcome in his three cases testifies to the wisdom of this method of treating status epilepticus in a woman suffering from pregnancy intoxication.

95. **Spontaneous Rupture of the Rectum.**—Henningsen's two patients were men of 57 and 59. The first had been harvesting turnips when he felt a sudden sharp pain in the lower abdomen and he went at once to bed. There was some nausea but no vomiting, hiccup, stools or flatus. The abdomen was slightly tender throughout; the percussion findings were practically normal and nothing abnormal was found on exploring the rectum. Cancer was surmised, but as the condition was not alarming the patient was merely kept under surveillance; some flatus was passed and a small bowel movement followed an enema. There was also a little vomiting but not ill smelling. The third day conditions grew rapidly worse and laparotomy revealed a minute perforation in the upper end of the rectum. It was sutured through an incision in the left iliac fossa but the man died the seventh day from diffuse fibrinous peritonitis. Nothing could be found to explain the perforation in this or in the second case. In the latter there had been no trauma, no exertion, and there had been an interval of five hours since the last and entirely natural defecation. Except for gastric ulcer twelve years before, the man had been clinically healthy. Three hours after dinner he felt a sudden and intense pain in the abdomen. The physician could find nothing abnormal in the abdomen or rectum but relieved the pain with morphin. By the next day the abdomen was diffusely tender, rigid and drawn in and the temperature had gone up a little. At the laparotomy no trace of the assumed gastric ulcer could be found and the trouble was traced to a perforation with sharp edges, about 2 cm. long and 1 cm. wide, lengthwise of the middle of the rectum. It was sutured through an incision in the right iliac fossa, but death soon followed. In this case absolutely nothing to explain the rupture was found at the time or at necropsy.

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May 31, LXXIX, No. 22, pp. 855-898

96 *Early Diagnosis of Liver Disease by Functional Tests. J. P. Gregersen.—p. 855. Commenced in No. 21, p. 831.

96. **Clinical Significance of Urobilinuria.**—Gregersen's conclusions as to the great diagnostic importance of urobilinuria are based on research on very nearly 400 persons, including 50 healthy, 42 with nephritis, 35 with gastric ulcer, 28 with diabetes, 31 with neurasthenia, 20 with chronic polyarthritis and other patients bringing the total to thirty-eight different diseases or affections thus tested. The urine was examined three or four times or more in nearly every case, and always more than once. A positive response to the test for urobilinuria was never obtained in the healthy or in those diseases in which the liver is not involved, regardless of the diet. But urobilinuria is the rule in all febrile conditions, the liver evidently suffering in all such. This must always be borne in mind in examining persons who have or have had fever within a few days. Even extensive cancer does not induce urobilinuria unless there is compression or other injury of the biliary apparatus. With chlorosis and secondary anemia there is no urobilinuria, while it is constant with pernicious anemia; probably the great destruction of reds imposes such extra tasks on the liver that it becomes insufficient.

Urobilinuria is the invariable accompaniment of disease of the liver. It is probably the first appreciable symptom of incipient cirrhosis of the liver and the first symptom of beginning obstruction of the outflow of bile, and it is the last to disappear when the stasis of bile has been corrected. When the obstruction to the bile is so complete that no bile gets into the intestines, there can be no urobilinuria; hence the absence of urobilinuria in such conditions testifies to complete obstruction of the bile passage. He adds that the test for urobilinuria is simple and easy by a modification of Schlesinger's technic: Add 2 or 3 drops of tincture of iodin to 10 c.c. urine, and thereafter 10 c.c. of a 1 per cent. suspension of zinc acetate in absolute alcohol. Agitate well and filter. In the presence of urobilin there will be a green fluorescence in the filtrate. This reaction persists for several days even with bacterial decomposition. It does not reveal and does not seem to be modified by albumin, pus, blood, sugar or bile pigment in the urine.